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Drs. GRAÇA COUTO E CASSIO DE REZENDE

CONTROL OF INFECTIOUS DISEASES

IN BRASIL

AND ESPECIALLY IN RIO DE JANEIRO

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RIO DE JANEIRO

1912

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CONTROL OF INFECTIOUS DISEASES

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AND ESPECIALLY IN RIO DE JANEIRO

BY THE

DELEGATES OF THE GOVERNMENT OF BRAZIL

IN THE

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RIO DE JANEIRO
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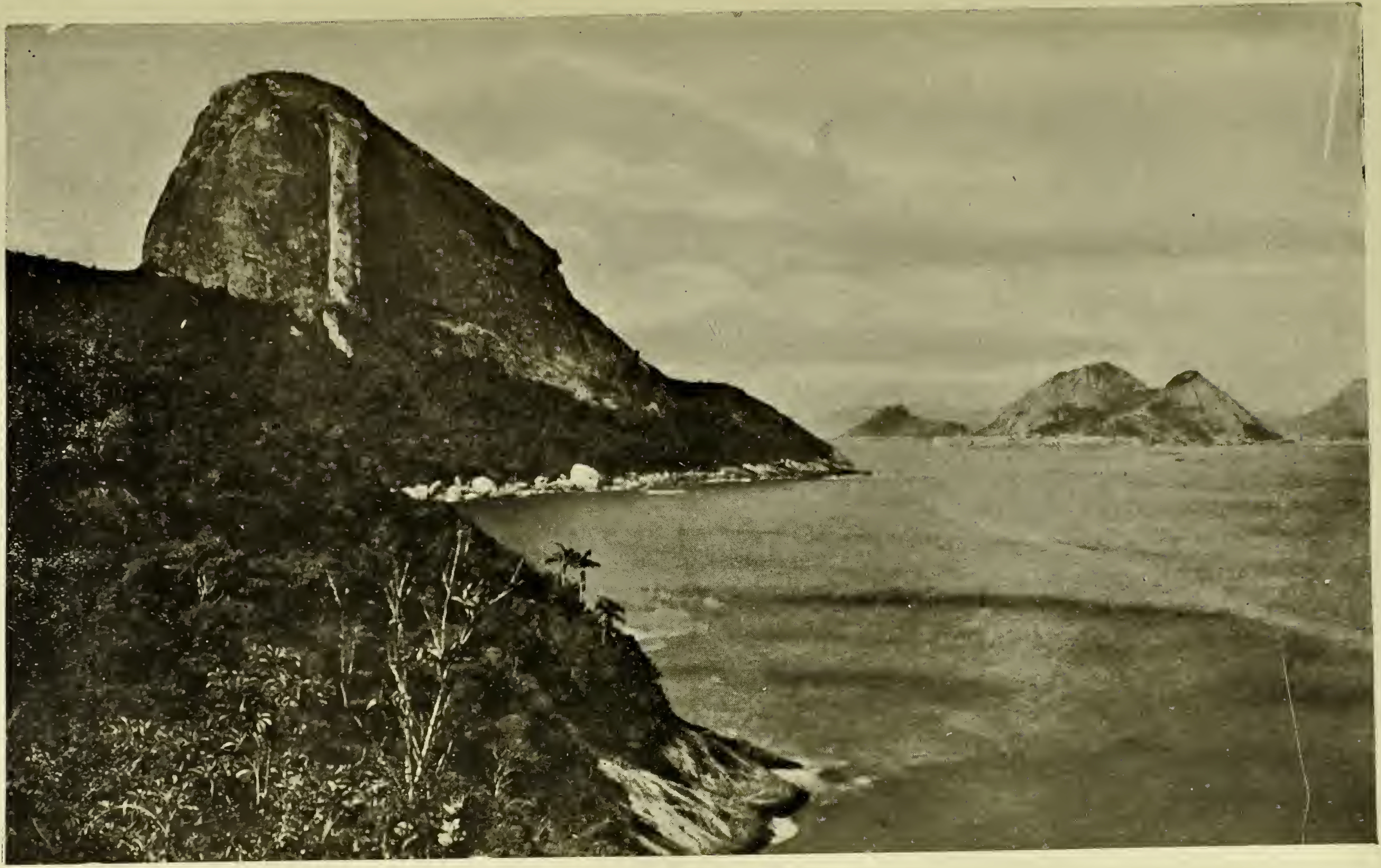

Rio de Janeiro

The entrance of the Bay from the Atlantic Occean

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CAMPAIGN against infectious diseases in Brazil and specially in Rio de Janeiro.

HISTORIC PRÉCIS OF SANITARY LEGISLATION IN BRAZIL

If it were necessary to give an illustration in order to demonstrate the efficacy of Hygiene for the sanitation of populous centres, none would, perhaps, be more eloquent than that of Brazil represented by its Capital : Rio de Janeiro.

This city affords a most striking demonstration of the truth of this statement, as we shall hereinafter attempt to show, giving briefly, on the one hand, an historical resumé of our sanitary legislation and, on the other, presenting absolutely correct statistic data by means of which may be seen, in a long period of more than half a century, not only the table of general mortality but also that of particular mortality from each of the principal infectious diseases which have prevailed therein.

Until the beginning of last century i.e. three centuries after the discovery of Brazil we may safely affirm that not the slightest traces of sanitary organisation existed amongst us. In this matter Portugal had neglected us entirely. If we wish to trace the first attempts at the organisation of public hygiene we must wait until the year 1808, when King John VI, of Portugal, compelled to fly from the invading army of Junot, was obliged to transfer the Capital of his Kingdom to Brazil. Upon his arrival, and following the advice of two doctors of his retinue, he created the positions of Head-surgeon of the army and Head-physician of the Kingdom, these officers being specially charged with the supervision of the practice of medicine and pharmacy and of the control of the services of public hygiene in the territory of Brazil.

For such purpose, they disposed of representatives in all the «Capitanias» and the law granted them almost arbitrary powers.

The organisation was undoubtedly required, otherwise, it would have been impossible not only to remedy the great defects which prevailed then in the construction of our large cities, including Rio de Janeiro, but also to prevent others from being added to those already existing.

However, in view of the fact that the new sanitary organisation would affect the interests of third parties whose prosperity had, until then, suffered not the slightest interference, this scheme became the object of general clamour and a terrible campaign, was soon started against it.

The result was that in 1826 a law was passed abolishing the position of Head Physician, thus giving the Municipalities the control of matters affecting the public health.

The municipalities, however, either from lack of means or else due to their incapacity, never paid real attention to such services, so that the little work which had already been done while the former laws were in force, fell to pieces and the cities of Brazil continued, as before, to develop along lines destitute of the most rudimentary principles of hygiene, entailing still graver consequences due to the fact that in 1808 its ports had already been thrown open to universal trade thus affording a greater probability of the importation of diseases unknown among us until then.

The City of Rio de Janeiro was no exception to the general rule: its municipality, to which the public health was entrusted, stood still and indifferent to all abuses and infringements of hygienic principles, so that when the epidemic of yellow fever broke out amongst us for the first time, in December 1849, its hygienic conditions could not be more precarious.

In order to give an idea of the condition of Rio de Janeiro in those days it is sufficient to say that, in spite of its having already more than 266.000 inhabitants, there were no properly installed drains but only a few unsloped ditches, ordinarily obstructed, in which dejections and dirty water decomposed under the tropical sun ; the refuse was thrown on the shore ; slops were thrown into the yards, thus transforming them in pools and sloughs ; corpses were buried in the churchyards, filling them with noxious odours ; dead animals, abandoned to the voracity of the vultures, were to be found in the streets and squares ; the streets and houses were invaded by water during the rainy season owing to inevitable floods, and the city became a vast collection of lakes and marshes.

When we add to these circumstances defective construction of the buildings, generally small, consisting of only a ground floor divided into alcoves, one can understand, in a general way, the conditions of the sphere in which, later on, the hygienists of Brazil were destined to operate, in order to attain the results of 1912, when, masters of the situation, they presided over a great city—a city clean, well ventilated and completely sanified.

How could a brilliant result of which we feel so proud and which honours us so much, be obtained ? It was obtained thanks to a continous campaign in favour of hygiene, the humane campaign of the medical corps of Brazil, to which campaign, we are glad to say, both the imperial Government and the present regime never failed to render the answering support that the public interests always demanded.

In this manner, after the first epidemic of yellow fever in Rio de Janeiro, had been stamped out, and in view of the municipality being unable to guard properly the public health, the imperial government, duly authorised by the Legislative Assembly took over this service and created in 1851 the Central Board of Public Health under the direction of which was placed the hygiene on land and sea in the whole territory of Brazil.

This Board was composed of one president and four members, all physicians, and of a Committee of engineers whose principal duty was to carry out the works intended to improve the sanitary conditions of the city.

In the Provinces of Pará, Maranhão, Pernambuco, Bahia and Rio Grande do Sul, Committees of Public Hygiene were created, composed of 3 members, appointed by the Government, and in the other

Provinces so called Superintendents of Public Health, all of them—committees and superintendents alike—in direct correspondence with and subordinated to, the Central Office installed in Rio de Janeiro, the city becoming in this way the center of the whole sanitary service in the Empire.

The code of laws of the Board of Health, considering the epoch in which it was issued, is a document which honours its authors.

It contains strict provisions with regard to the practice of medicine and pharmacology, which professions were submitted to rigorous supervision ; it contains likewise special topics regulating the sanitary examination of private residences and ships as also re the supervision of the consumption of food.

Fines of 200$000, suspension up to 3 months and imprisonment up to 15 days were provided for infractions of the law, it being permitted, in certain cases, even to order the closing of private houses and business premises which might refuse to comply with the provisions made by the sanitary authorities.

It may be said that the work of sanitation of Rio de Janeiro dates from this epoch.

Due to the influence of the recently created Board, certain more ambitious measures came into operation, such as the filling in of marshy lands, removal of dirt from the city to distant localities, dredging of rivers, clearing of ditches, establishment of cemeteries and prohibition of burials of corpses in churches, installation of drainage and the passing, in short, of numerous Bye-Laws intended to abolish the practice of old customs and abuses detrimental to the public health.

Unfortunately soon after this important campaign was initiated, Brazil was engaged in a long and expensive war which absorbed, so to speak, during 5 years, its whole energy.

At the termination of this war, the Government again devoted its attention to this important problem, not only introducing partial alterations in the Regulations of the Central Board of Hygiene, in order to equip it more thoroughly to perform its duties, but also appointing at different times various committees of hygienists to study the principal causes of epidemics specially of yellow fever, which, as opposed to other diseases, resisted the action of hygiene.

Some of the plans of sanitation entertained at that time were really collossal, and if Brazil had been in a position to face the expenses of their execution very likely the bad reputation we had up to 1904, would have disappeared long before.

The principal measures indicated then as capable of exterminating yellow fever were : complete drying up of the marshes and drainage of the soil in the lower parts of the city ; the systematic and continual regularisation of the rivers and valleys ; the sanitation of the lake Rodrigues de Freitas ; the opening up of streets, avenues and squares and the widening of some old streets; construction of a quay along the entire length of the shore, which then consisted of muddy beaches ; the rasing of the hills named Castello and Santo Antonio ; increase of water supply to the population, and, finally, reconstruction, wholly or in part, of the system of drainage which had been installed previously.

As may be seen, it was a vast scheme for improvements, many of which were carried out later, although at that epoch they were far beyond the resources of our country. The Government, however, instead of feeling discouraged, made every attempt to carry out such of these services as were within its power, and amongst the measures then adopted we must note the reorganisation of the Central Board of Hygiene, created in 1851, which reorganisation was made in 1886, and in virtue of which the sanitary services were divided into Land Service and Maritime Service, each one of them under the direction of a General Inspector.

The General Inspectorate of Hygiene on land consisted of one Inspector General and 4 members of the Committee; it exercised its authority untrammelled and by means of 32 Medical delegates in Rio de Janeiro, and through the Inspectorate, or Inspectors of Hygiene and their delegates, in the Provinces.

The said Department disposed of the following staff to carry out the different services entrusted to it, to wit : one doctor responsible for the compilation of statistics of sanitary demography; 4 analytical chemists for analyses, 2 chemists for the supervision of the chemist-shops and a certain number of employés for the purposes of disinfection.

The General Inspectorate of the Health of the ports exercised the supervision of the port of Rio de Janeiro through the Inspector General and his 4 assistants, also physicians, and in the States through the Sanitary Inspectors and their assistants.

Besides the 2 General Inspectorates, a Supreme Board of Public Health was instituted in Rio de Janeiro for the purpose of deciding upon such questions of hygiene and public health as the Government might submit to their consideration, the said Board consisting of the Heads of the chief Departments of Health, of the President of the then Imperial Academy of Medicine, of the Director of the School of Medicine of Rio de Janeiro, of the Head Surgeons of the Army and Navy and of other officers and competent professional men.

There were sanitary inspectors in all the capitals of the Provinces, with delegates in the cities and towns of greater importance, all of whom were under the immediate direction of the Inspector General of Hygïene.

This sanitary organisation which was strictly regulated and perfectly in accordance with the most advanced ideas of the day as regards the prophylaxis of diseases, remained in force, with slight alterations, until the promulgation of the Constitutional law of the Republic on the 24 th February 1891.

As the direction of the different services of hygiene was entrusted to the States in virtue of art. 5 of the said Constitutional law, its former centralisation disappeared, so that the Federal Government reserved to itself only the supervision of hygiene in the ports, which, due its international character, could not be entrusted to the administration of the States.

In Rio de Janeiro, these services were transferred to the Municipality, but as the means which the latter could dispose of were not sufficient to maintain and develop such services as required and yellow fever continued to prevail in an epidemic form, the city running the risk of being ravaged by the Plague which had appeared in it at the end of the year 1899, the Federal Government duly authorised by the Legislative Power decided to take over the said services, and created the Directorate General of Public Health under the supreme direction of which was the hygiene of the ports and the hygiene of the land of the Capital of the Republic.

In November 1902, Councillor Francisco de Paula Rodrigues Alves became President of the Republic having included in his programme of administration as the pivot of his government, the complete sanitation of Rio de Janeiro, specially as regards yellow fever, of all diseases the one which was causing us the greatest harm, having resisted so far, all hygienic measures adopted and carried out since 1850.

In March 1903 our eminent hygienist Dr. Oswaldo Gonçalves Cruz was nominated Director General of the Public Health Department and, having accepted this glorious and difficult task, he pledged himself to the Government to stamp out the epidemics of that disease within the period of 3 years, for wich purpose he laid down forthwith as the first condition for success a complete reorganisation of the Department he was going to control.

By Legislative Decree of the 5th January, 1904, the reorganisation asked for was carried into effect, and in accordance with it the sanitary services entrusted to the Union consisted of the following :

1—In the whole territory of the Republic ;

(A)—The study of the nature, etiology, treatment and prophylaxis of transmissible diseases which might appear or develop in any locality of the Republic where there should be no material resources nor any service organised for the investigations of a technical or scientific nature which might be required, or even where these elements might exist when the government should judge it necessary that such studies should be carried on ;

(B)—The lending of medical and hygienic assistance to the people of the Provinces in response to the requisition of the respective governments, as soon as a case of public calamity had been verified ;

(C) —The sanitary service of maritime and fluvial ports;

(D) —Supervision of the preparation of all vaccine matter, serums, attenuated cultures and similar products, prepared by private or official institutes or laboratories;

(E) —Supervision of the practice of medicine and pharmacy in all their branches, as regards legal capacity and professional knowledge;

(F) —Organisation of demograph-sanitary statistics in which should be included all notions which might be colligated with regard to the causes of the disease or of the death, studied from concrete exemples both in the Federal District and in the States;

(G) —Drawing up of the Sanitary Code and of the Brazilian pharmacopœa and supervision of its strict observance.

II—In the Federal District: The exclusive superintendence:

(A) —Of whatever might refer to domiciliary hygiene, to the Sanitary Inspection of private residences, public places and resorts.

(B) —Of whatever might refer to general and specific prophylaxis of infectious diseases. The general direction and execution of the services above referred to, were entrusted exclusively to the General Board of Public Health which disposed for such purpose of a large staff and of special resources in order to render effective the provisions set forth in the Regulations. (Bye-Lavvs)

In this way the Court of Public Health, consisting of one Judge, one Attorney, one Sub-attorney, one Clerk and several bailiffs, was created; the said Court being competent to decide upon all actions and processes, civil or criminal, relating to Hygiene and Public Health, concerning to compliance with the laws and sanitary regulations, referring to the observance and effectiveness of Orders and Writs of Sanitary Authorities or re their acts as such.

The same Court had special jurisdiction in the first instance, for the process and judgment of any suits brought up for:

1 — Eviction, demolition, interdiction, expropriation, repairs of buildings or other properties.

2 — Collection of fines or sanitary taxes.

3 — Judgment of offences and trangressions against Hygiene and Public Health.

4 — Any action which might affect the Public Health.

As penalties for sanitary transgression, fines up to two contos of reis were imposed, which fines might be converted into a maximum of three month's imprisonment, as well as the two combined or otherwise, and even by way of precaution: seizure and destruction of rotten goods or of those which be deemed detrimental to Public Health, sequestration and sale of animals and objects the existence of which in the houses might be prohibited; cancellation of licences, closing and interdiction of buildings, works and constructions.

Besides, the Court of Public Health, a Department of Sanitary Engineering was created consisting of three Engineers whose duties were: —

1 — To attend to all technical matters relating to sanitary engineering which might be pointed out by the proper authority.

2 -- To report upon such constructions as might be deemed unhealthy by the medical sanitary authorities and to supervise any works these latter might advice.

3 — To carry out all works and constructions dependent on the General Board of Public Health.

For the execution of the service of the sanitary police and the medical supervision, the city of Rio de Janeiro was divided into ten sanitary districts, each one of them under the directíon of a Health Delegate, a physician, assisted by 6 or 7 sanitary inspectors, also physicians.

The service of the sanitary police being intended to avoid the outbreak and propagation of infectious diseases, and to prevent and correct the defects of residence-houses and abuses of their proprietors, lessees or tenants, consisted of visits regularly made to all private or boarding-houses, establishments of any sort, lands cultivated or not, public places and resorts, where the sanitary inspectors, besides attending to the hygienic conditions, cleanliness, preservation of the health of the inhabitants, examined also the condition of the reservoirs of potable water and their supply, the integrity and operation of the sanitary installations, bath-rooms, tanks, ponds, drains, culverts, etc., as also the cleanliness, preservation and hygienic conditions of the areas, yards, enclosures, coach-houses, stables, cattle-sheds, etc. always assisted by a numerous staff who immediately executed the measures of an urgent character determined by the authorities, such as :

(*A*) — Destruction of all centres and breeding-places of mosquitoes ;

(*B*) — Removal of dirt, tins, bottles, potsherds and filth accumulated in the interior of houses, in grounds, public places and resorts ;

(*C*) — Cleanliness, washing and disinfection of water reservoirs, tanks, tubs, ponds, water spouts, culverts, gratings in or outside houses, hen-houses, basements etc., regulation of ditches and rivers, dredging and filling up of marshes, wells, cisterns etc.

Whenever the measures to be taken for sanitation of a residence-house or establishment were of an urgent character the sanitary inspector served a summons on the proprietors, or their attorneys, lessees or tenants, indicating the works of improvement to be carried out and fixing in the said deed of summons the period granted for so doing.

All the houses, apartments or establishments left by their tenants were immediately visited by the sanitary inspector who decided whether they afforded or not the hygienic and other conditions indispensible for their being occupied.

For the execution of this provision of the Regulations, directly after a house became vacant, its proprietor was required to remit the keys to the Health Department under penalty of a fine of from 50$000 to 200$000.

After the visit of inspection and the execution of the works of improvement stipulated by the sanitary Inspector, the house was submitted to a rigorous disinfection, without wich it could not be let again, On the other hand, no house could be built without previous approval of its plans by the sanitary authorities. Thanks to these measures no more houses were built in Rio de Janeiro which were not strictly in accordance with hygienic principles and, likewise, the old buildings began to be radically altered and improved by the opening of air spaces and windows for the penetration of sufficient air and light.

Besides these provisions, the regulations created many others relating to private houses and boarding-houses, factories, business premises, etc., which we do not mention, in order not to extend this précis of our sanitary legislation to too great a length.

The medical supervision which was made by the sanitary inspectors, consisted in the daily examination, during the maximum period of the incubation of a given infectious disease, of all persons who had come into close contact with the patients or who were residing in the place infected, or of such persons as might come from localities where any of these diseases prevailed.

In order to facilitate the inspection of people arriving in Rio de Janeiro, the railway companies, as well as the captains of steamers, were bound to submit to the General Board of Public Health a complete list of passengers coming from the infected localities, specifying their residences, heavy fines being levied not only on those who should fail to comply with this provision of the regulations, but also on such passengers, as in any manner, might attempt to elude the inspection.

The sanitary inspectors who from neglect or carelesness should fail to conduct the examination of the persons under their charge with due energy and care were likewise severely punished.

Besides the Health Departments to which we have just referred, two great offices were created in the General Board of Public Health, viz : The Office of Inspector of the Service of Isolation and Disinfection, and the Office of Inspector of the Service of Prophylaxis of Yellow Fever.

The first was responsible for all disinfections required in the city as well as for the removal to the isolation-wards of persons suffering from infectious diseases; and the latter was devoted to the prophylaxis of yellow fever, being responsible for the isolation of the patients as well as the disinfection of the infected buildings and the execution of measures intended to destroy mosquitoes and their breeding-places.

Disinfecting Station (Botafogo).

The General Board of Public Health disposed further of a demographic service entrusted with the organisation of the demographo-sanitary statistics of Brazil, in general, and of Rio de Janeiro in particular ; a Pharmaceutical section, the employées of which were charged with the supervision of the practice of pharmacy; a Bacteriological laboratory with a Director, 4 technical assistants and finally two Isolation hospitals, namely: S. Sebastião, for Brazilian subjects, and Paula Candido, for sick people removed from on board ships lying in the port of Rio de Janeiro.

The General Board of Public Health being thus installed, began to act together with the Prefecture, which was opening avenues in various parts of the city and, at the same time was constructing along one part of the littoral, a sea side avenue which had been designed many years before.

At this same epoch the eminent Brazilian Statesman Dr. Lauro Muller, our present Minister of Foreign Affairs, who was, then, Minister of Roads and Public Works, undertook the collossal works of the quay of the Port of Rio de Janeiro; threw open in the central part of the city a broad and extensive avenue called the Avenida Central, touching at its extremities two distant points on the shore of our large bay; for such purpose more than one thousand buildings were pulled down; prolonged the Mangue canal; ordered the renewal of the drainage system, improved the distribution of potable water and promoted other improvements of the highest value for the sanitation of our metropolis.

Thus we had the great good fortune of seeing the ambitious scheme of improvements crowned with complete success by the extinction of yellow fever and the transformation of a city formerly of ill repute into a beautiful capital where one can live with no fear of diseases.

Mortality from infectious diseases in Rio de Janeiro

1903-1911

	1903	1904	1905	1906	1907	1908	1909	1910	1911
Yellow fever.....	584	48	289	42	39	4	—	—	2
Plague...........	360	275	142	115	73	54	15	18	22
Small-pox........	1000	4201	295	10	130	9046	355	1	8
Measles..........	86	62	270	22	49	149	57	312	144
Scarlet fever.....	4	7	4	—	1	6	2	—	—
Diphtheria.......	52	55	51	46	39	52	34	39	43
Whooping cough.	23	77	64	72	79	70	78	115	198
Typhoid-fever...	125	80	58	71	58	58	54	42	47
Dysentery........	74	78	45	69	77	81	60	62	222
Beriberi..........	120	124	73	77	34	33	32	25	12
Malarial-fever....	1036	671	484	527	554	564	525	448	378
Tuberculosis.....	3321	3075	3164	3140	3098	3616	3346	3640	3566
Leprosy..........	20	24	29	24	35	22	14	12	29
Total........	6815	8777	4967	4215	4296	13755	4572	4714	4671

In fact, from this point of view, no other part of the world, perhaps, can afford better conditions than Rio de Janeiro as, with the exception of small-pox, which can be easily avoided by vaccination, and tuberculosis, which is nowadays decreasing considerably as will be seen hereinafter in a suggestive diagram, all the remaining infectious diseases represent amongst us, a mortality very much reduced as compared with that of the other large cities of the world, as we shall demonstrate further on.

The sanitary organisation of which we have just spoken is still in force, having been modified only in one point, i. e., in the Court of Public Health which disappeared at the last reorganisation of Justice of the Federal District, to which were transferred all processes and judgments of suits brought up in virtue of infringement of the sanitary regulations.

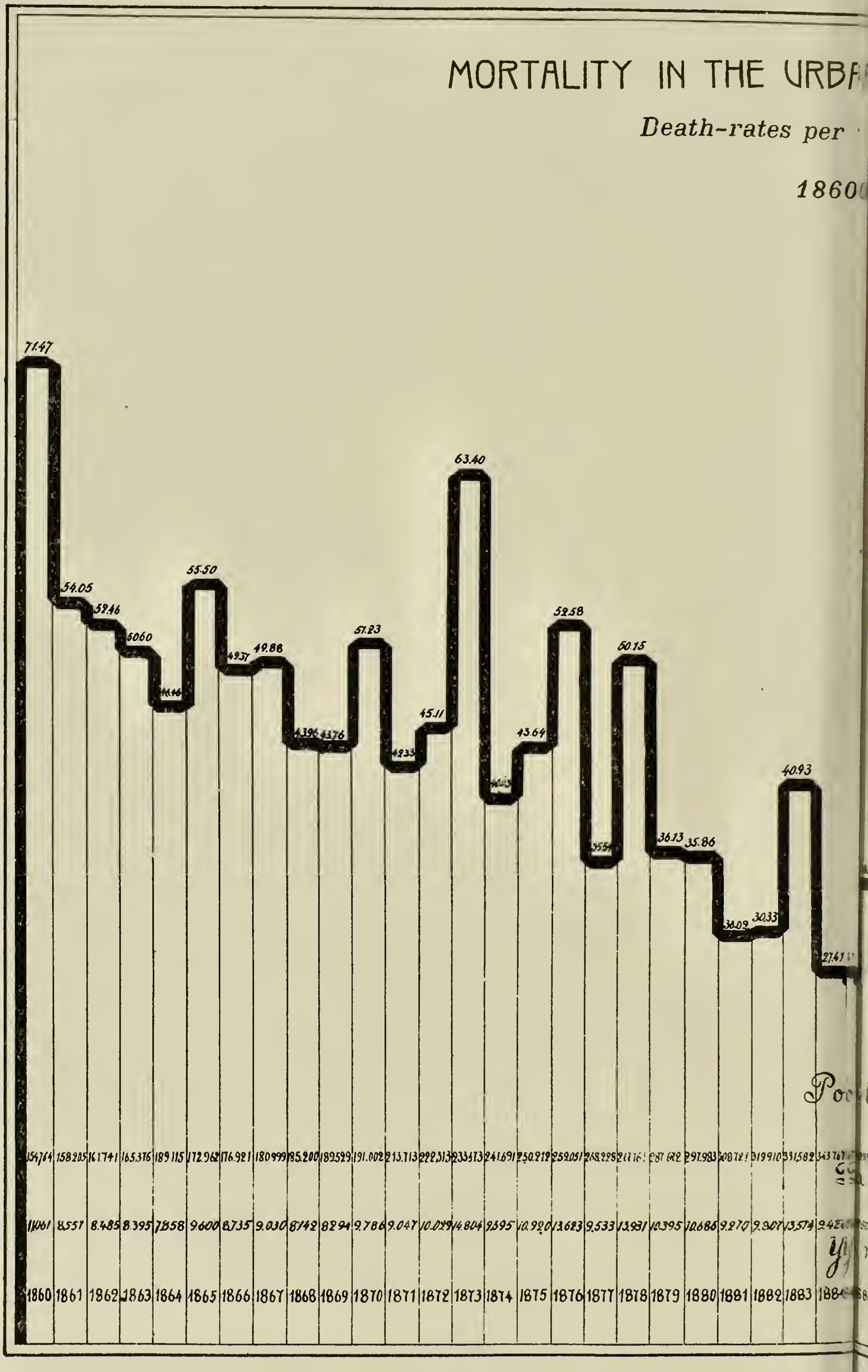
With the exception of this unimportant alteration, which presents of course no inconvenience, these services are carried out with the same strictness as before, being the object of the greatest attention by the civil powers.

In this way, in order to avoid in a more efficient manner the importation of infectious diseases by sea, the Government, in November of last year, decided to reorganise the service of the health of the ports, increasing the staffs and supplying them with the material required for the perfect fulfilment of their duties.

In virtue of this reorganisation the sea-line of the Republic was divided into 20 Health Inspectorates, each one fitted with a disinfecting station and an isolation hospital.

In Rio de Janeiro, besides the Office of the Sanitary Police consisting of 6 Inspectors charged with visiting all steamers, a Bureau of Inspection of Prophylaxis of the Port was created, which, until then, had no autonomous existence.

The aim of this is to superintend the service of disinfection of ships and to remove sick people from on board to the isolation hospitals.



MORTALITY IN THE URBA

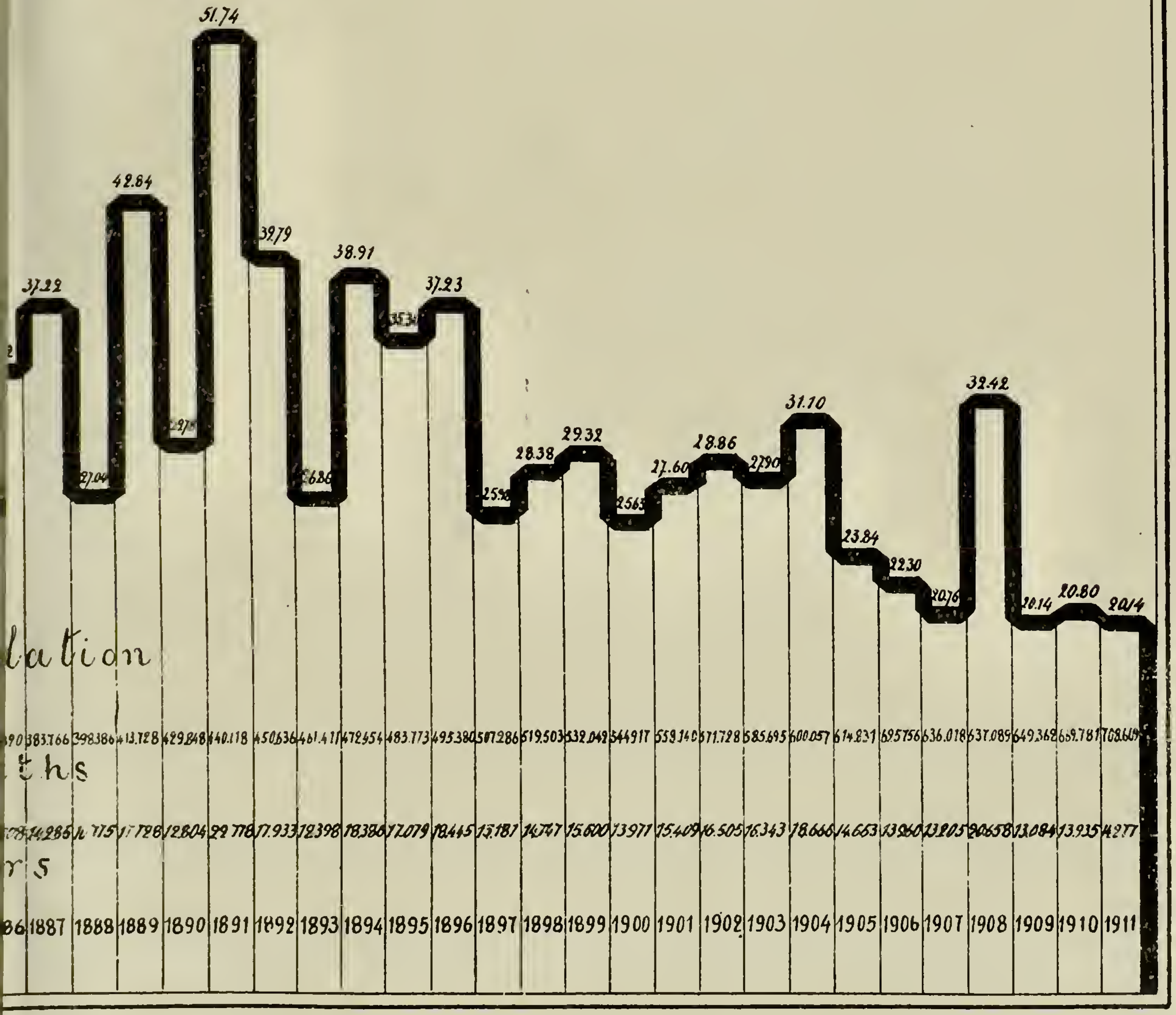
Death-rates per

1860

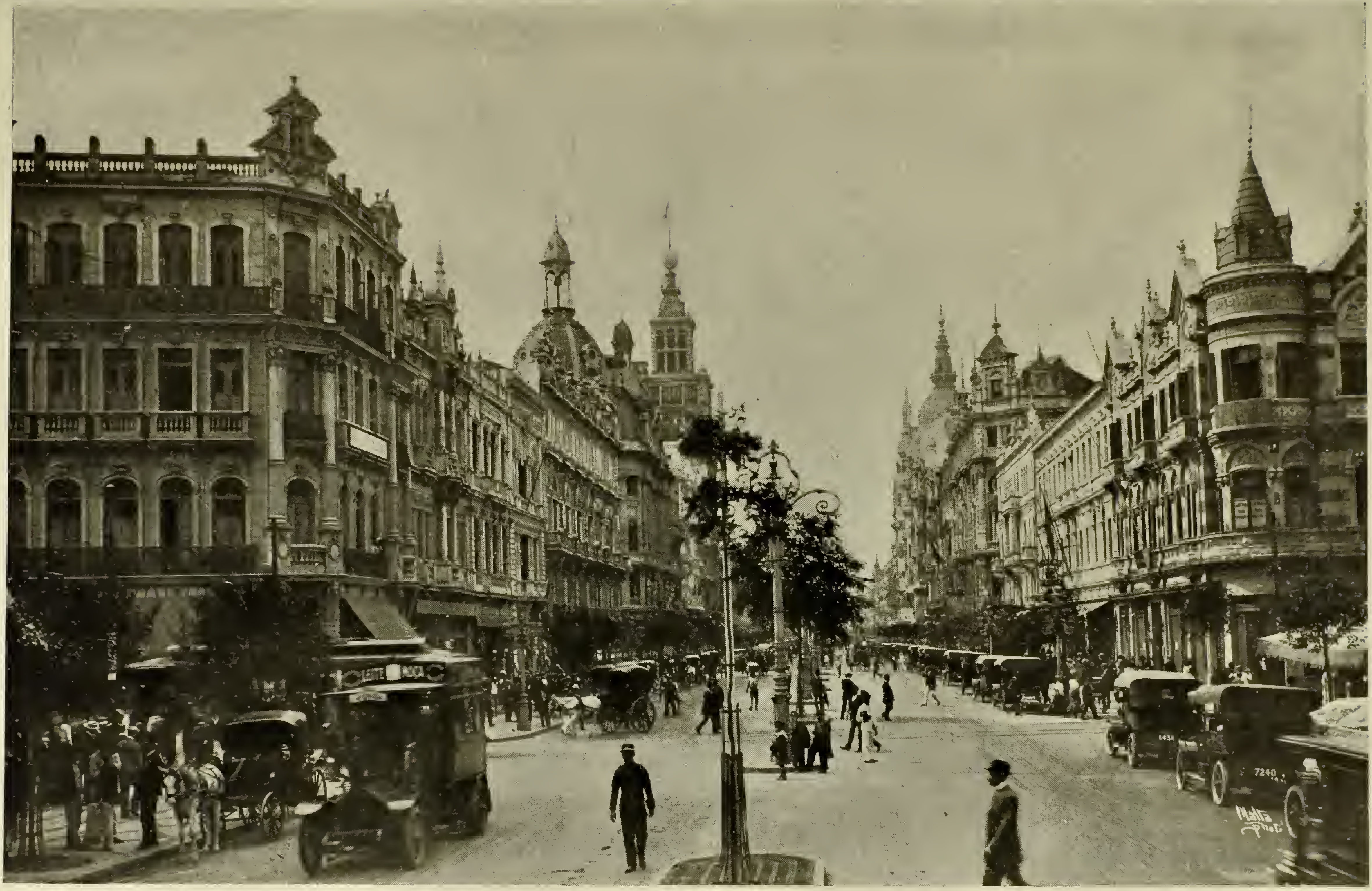
DISTRICT OF RIO DE JANEIRO

0 persons living

-1911



From the above statement one can conclude that, in Brazil, the problem of public health has been a subject of great and serious attention to its Governments since the days of the Empire and that, at the present moment, this country is perfectly equipped, not only to defend itself against the importation of exotic diseases, but also to stamp out immediately all focuses of epidemics which may be formed in any part of its territory.



Rio de Janeiro

Central Avenue, at present called Rio Branco Avenue

General and specific prophylaxis of infectious diseases

Each disease of compulsory notification implies prophylactic measures of a general character, and whenever it is scientifically feasible, has its own special prophylaxis.

While furnishing a brief outline of the measures of general prophylaxis, we shall present in a succint manner the measures referring to each of the diseases of compulsory notification, specifying what has been done in the city of Rio de Janeiro in the campaign against infectious diseases.

By the reorganisation of the services of administrative hygiene of the Union, in 1904, all matters relating to the general and special prophylaxis of infectious diseases are entrusted to the General Board of Public Health by means of the Inspectorate of the Isolation and Disinfection Service, of the Inspectorate of the Special Service of Prophylaxis of Yellow Fever, and of the Local Health Departments.

The service of prophylaxis comprises: *a*) notification; *b*) isolation; *c*) disinfection; *d*) medical supervision.

The diseases of compulsory notification are as follows;

1°. — Yellow-fever.
2°. — Plague.
3°. — Cholera and choleraic diseases.
4°. — Small-pox.
5°. — Diphtheria.
6°. — Puerperal infection in maternity cases.
7°. — Ophtalmia of new-born children in maternity cases.
8°. — Typhus and typhoid fever.
9°. — Leprosy.

10ᐧ. — Tuberculosis, whenever there is the elimination of the specific bacillus.

11ᐧ. — Malaria.

12ᐧ. — Scarlet fever and measles whenever it occurs in colleges, asylums, and other similar establishments.

13ᐧ. — Beriberi.

The General Board of Public Health may, however, propose to the Government that any other disease not set forth in the Bye-Laws be considered as a disease of compulsory notification.

Whenever a case of an infecto-contagious disease occurs, the Medical practitioner is bound to notify it to the Sanitary Authorities under penalty of a fine. Should however no medical assistance be obtainable, and the disease be of an easily recognisable infectious character, the head of the family, administrator, proprietor or lessee of the establishment is bound to make such notification.

The medical authority shall appear at the place and make a thorough enquiry as to the causes which determined such disease and as to the origin of the contagion. He must observe minutely the conditions of the patient and of the residence, and take all necessary steps for the suppression of the disease and to prevent the spread of the epidemic ; and he shall, forthwith, notify to the respective Inspectorate the result of his visit, making a clear and precise statement of all facts of the case in order that the necessary measures of isolation and disinfection be carried out.

Should the case occur in a boarding house or in an overcrowed building, and the accommodation fail to offer the conditions required for securing perfect isolation from the other tenants, or should the patient lack means for proper treatment at home, he must be sent away to the proper hospital.

For such purpose the sanitary authority shall require the removal of the patient, which removal is made in an auto-ambulance mounted on easy springs and fitted in the simplest manner in order that it may be easily washed and disinfected.

After removal of the patient, the room occupied by him shall be locked up and all entry prohibited until disinfection, and nothing whatever shall be removed therefrom.

Should however the patient be in a position to receive regular medical attendence in his own residence, and should this residence fulfil all conditions for safe isolation, avoiding any probability of propagation of the disease, the sanitary authority shall determine whatever may be deemed advisable, and follow closely the state of the patient, supervising the observance of the technical prescriptions. The isolation is then made in a well ventilated room, exposed to light and situated as far as possible from the other rooms of the house and only the doctors and their assistants, professional or otherwise, shall enter such room, visits of outsiders being sirictly forbidden.

All measures for disinfection must be complied with by those who attend to the patient.

Special attention must be paid fo all excrements during the whole period of the disease, as they are powerful agents of transmission of a great number of epidemical diseases.

All utensils used by patients, their bedding personal clothes and objects of toilet, must be thoroughly disinfected.

These are the most important measures recommended and taken by the sanitary authorities during the progress of the illness and until the complete recovery, or the death, of the patient.

In either case the disinfection of the residence is obligatory, both before and after removal of the patient to the isolation hospital.

The measures of isolation would be of no use if they were not followed by the thorough disinfection of the infected place, of all objects pertaining thereto, specially of such as might have been used by the patient directly or indirectly including those used for his expectorations, urine, excrements and other impurities.

Thence, the disinfection of residences, including clothes, furniture, and objects and utensils existing therein.

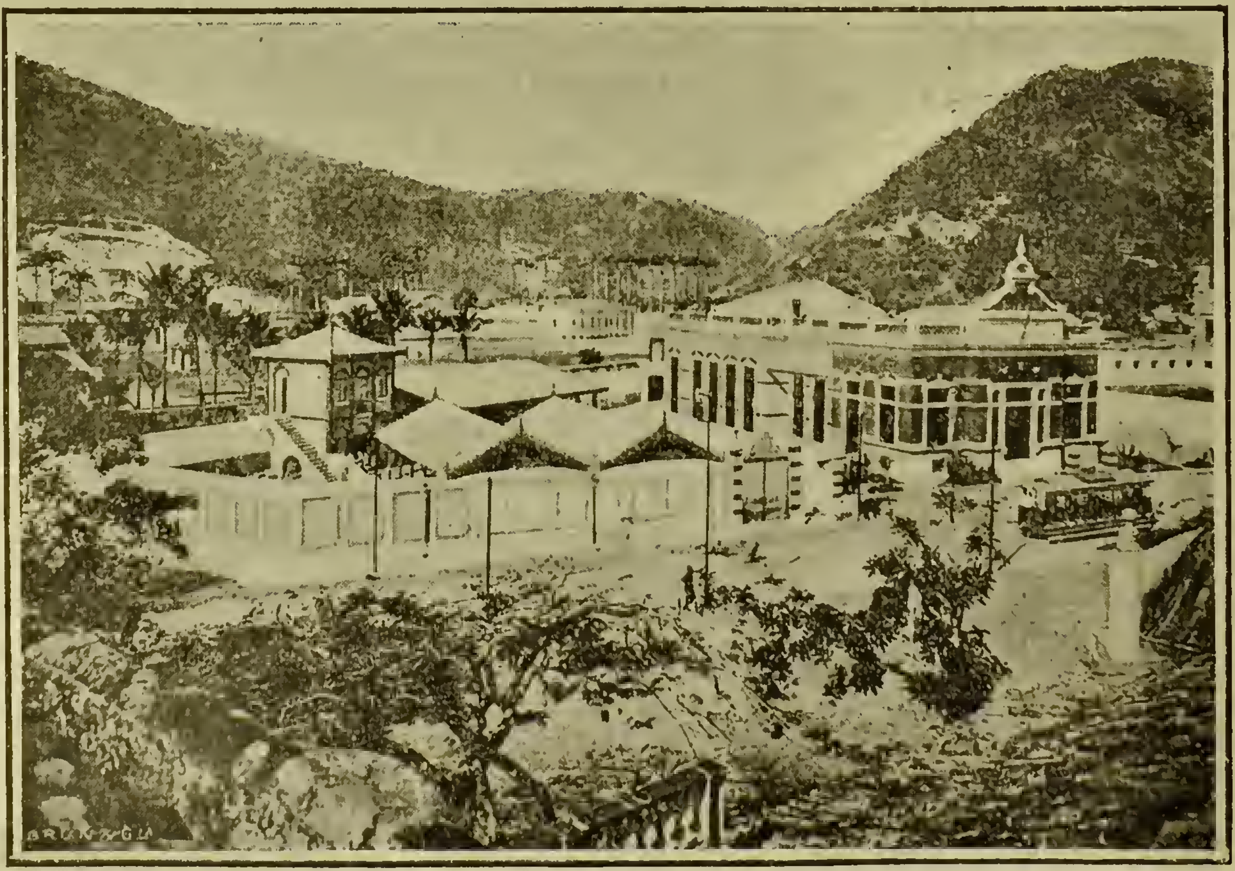
All floors, ceilings, windows, doors, drains are disinfected, absolutely nothing being neglected, in order that all germs may be destroyed.

Objects of no value or esteem, toys, medicaments, straw, rags etc., are burnt.

After cleaning the room occupied, and all other parts of the building, all residues resulting from the operation are assembled and burnt.

Should a patient attacked by an infectious disease die, he will remain in the place where he died until he is removed to be buried, which removal must take place with all possible haste ; and while the corpse remains in the house it will be disinfected with strong solutions.

There is in the City of Rio de Janeiro a model establishment for public disinfection, and another, more ample and modern, is in course of construction, in order the better to attend to the various localities of the extensive area covered by the city, generalising public disinfection, rendering it easier and safer, and thus removing the innumerable and dangerous inconveniences caused by great distances.



Disinfecting Station. (Botafogo).

This new Desinfectory will be the Headquarters of the Inspectorate of the service of isolation and disinfection, the present one becoming a branch ; another, in greatly inferior conditions and of minor importance, situated in another part of the city, will also be a branch office.

The construction of this fine. Building, in the upper floors of which are to be installed the General Board of Public Health and its principal departments, will be concluded within a brief period of time, thanks to the untiring efforts of the eminent Minister of the Interior, Dr. Rivadavia Correia, who encourages with enthusiasm all progressive ideas aud also to the General Director of Public Health Dr. Carlos Seidl who takes a vigorous interest in all questions relating to Public Health, displaying rare zeal, intelligence and knowledge.

The duty of the Inspectorate of isolation and disinfection embraces :

a) — the isolation at home of all patients suffering from infectious diseases of compulsory notification (those of yellow fever excepted) when such isolation is permitted or necessary ;

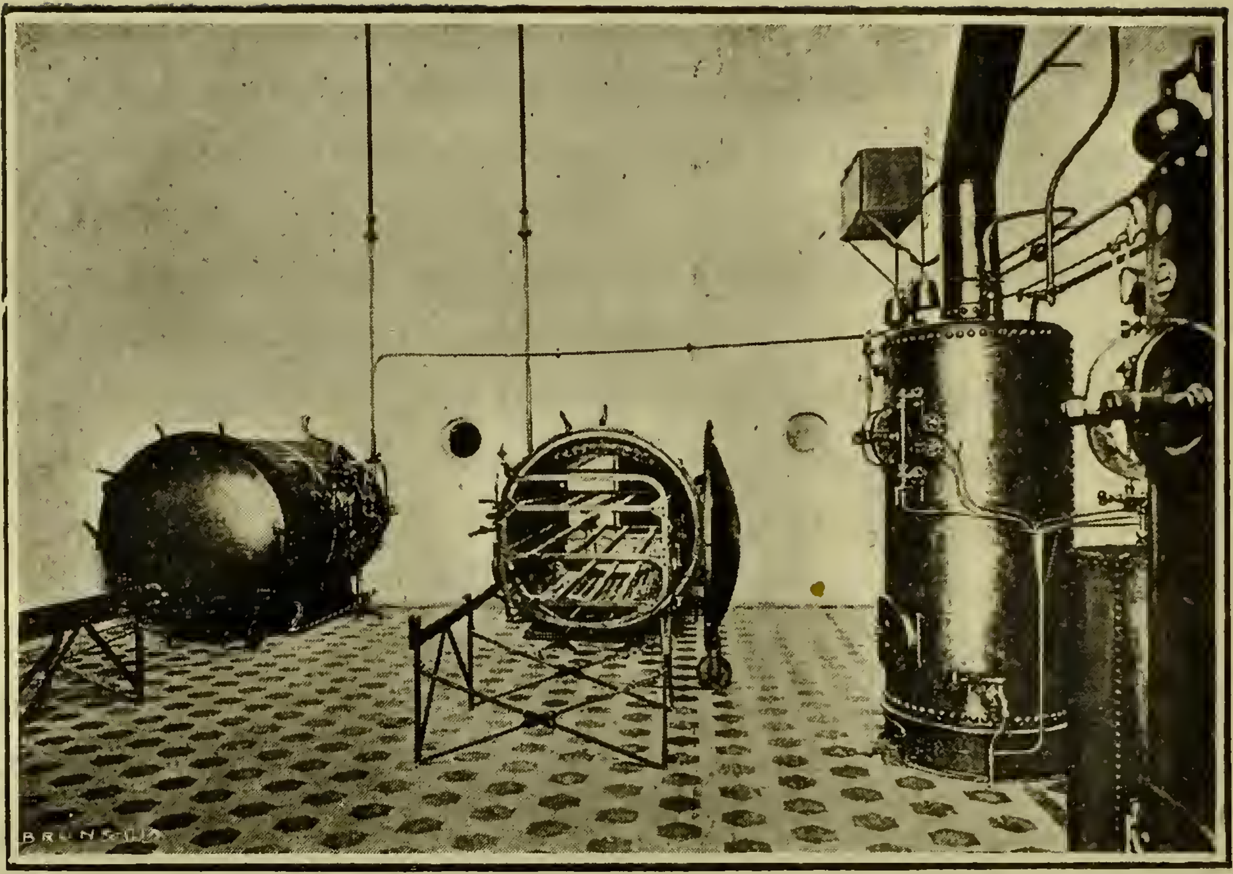
b) the removal of patients to the isolation hospital when they cannot be treated at home ;

c) — the disinfection of all buildings in which may have occurred cases of infectious diseases, also of all empty houses to let, and places and dwellings the disinfection of which be requested by authorities or by the proprietors or tenants thereof.

d) — the extermination of rats in the prophylaxis of plague.

The staff of the Inspectorate consists of a medical inspector charged with its oversight ; a general manager ; an assistant manager ; two clerks ; two responsible employées ; five foremen of disinfecting parties ; 12 first class disinfecting officers ; 24 second class disinfecting officers ; one saddler and four assistants ; six carpenters ; one stable manager and four assistants and 100 second class ditto.

It owns an extensive equipment of stoves, fixed and moveable, steam pulverisers, apparatus for disinfection by means of liquid and gaseous agents, vans for the transport of patients, of the staff material, and of infected and disinfected clothing, etc.



Disinfecting Station – Stove-room. (Disinfected section)

From 1903 to 1912 (May) the following disinfections have been made as per table herewith :

TOTAL OF INFECTED HOUSES DISINFECTED

1903	30 775
1904	50.285
1905	25 561
1906	22 045
1907	23.741
1908	41 355
1809	29.696
1910	25 809
1911	21 442
Total	270.709

TOTAL OF PIECES OF INFECTED GOODS DISINFECTED

1903	41 371
1904	63.741
1905	23 863
1906	22 169
1907	27 387
1908	134 031
1909	29 715
1910	31 841
1911	28 351
Total	402.469

TOTAL OF PIECES OF INFECTED GOODS DESTROYED

1903	9 932
1904	10.505
1905	4.862
1906	5.054
1907	6.130
1908	15.855
1909	6.357
1910	5.636
1911	5.835
Total	70 166

Besides the notification, isolation and disinfection, the general prophylaxis of infectious diseases comprises medical inspection, consisting of daily examination, during the maximum period of incubation of a given infectious disease, of all carriers of the disease (persons residing in the same house or who may have come into contact with those suffering from such diseases, as well as of such persons as may have come recently from places where the diseases are known to exist).

This supervision is exercised:

a) — over persons resident in the same house;

b) — over persons residing in the proximity of suspected houses and districts, at the discretion of the sanitary authorities;

c) — over persons recently arriving from foreign infected centres, as well as from such centres in the Republic, wheter inland or on the coast.

Medical inspection of the said persons is individual and consists of the clinical examination necessary for niping in the bud any manifestation of the infectious disease. The period for inspection and the mode of inspection varies with the nature of the infectious disease which has rendered such inspection necessary.

The specific prophylaxis of infectious diseases obeys special rules which we shall analyse as and when we describe each one of the diseases provided for in the Regulations of the services of Public Health.

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I

YELLOW-FEVER

There are historians who maintain that yellow fever appeared for the first time in Brazil, in 1686, in the Provinces of Pernambuco and Bahia; but the existence of such epidemics, as really being of yellow fever, is so doubtful that it is not requisite to insist upon them.

That being so, one may affirm that the appearance of the disease in question in the territory of Brazil dates from the year 1849 when in the Province of Bahia the first case made its appearance in the person of one of the crew of the American Brig BRAZIL, coming from New Orleans, on board of which various cases manifested themselves during the voyage.

From Bahia, where in a short time the disease assumed enormous proportions invading the whole City and causing great mortality, it spread to the North of Brazil, descending at that same time to the South overrunning Espirito-Santo, the city of Rio de Janeiro, the Province of the same name, São Paulo, Paraná and Santa Catharina

Of the provinces bathed by the Ocean only Rio Grande do Sul was spared, and in those where the epidemic manifested itself only the towns on the coast were laid waste. The disease on this occasion did not penetrate inland, the central Provinces of Minas Geraes, Goyaz, and the far distant Province of Matto-Grosso remaining entirely free of it. Later on, however, especially since 1883, and probably owing to the improvements which our means of transport were undergoing by the construction of railways connecting the littoral with the inland towns, these provinces too began to be invaded by the terrible scourge and in São Paulo, Minas and the Province of Rio de Janeiro there were towns which were almost entirely destroyed, so great being the number of their inhabitants victimised by the epidemics which devastated them.

PROGRESS OF THE EPIDEMICS IN RIO DE JANEIRO As we have already stated, the yellow fever made its appearance in the city of Rio de Janeiro in 1849, the first two cases having appeared on the 27 th of December of that year, in the persons of two sailors belonging to the American Bark NAVARRE coming from Bahia.

Rio de Janeiro was already, ou that occasion, a well advanced town, having a population of over 266,000 inhabitants ; nevertheless in matters of hygiene, as we have shown in the first part of this work, it was in a forlorn state. There were no regular sewers and the refuse was cast upon the beach ; slops thrown into the backyards, forming large mud-pools everywhere marshes abounded and stagnant waters were kept in cesspools and drains; graves were dug in the ground of the churches, filling them with putrid effluvium ; and in the rainy season, the water not finding an easy outlet, innundated the streets and invaded the doorsteps of houses. From this heap of defects resulted, as it is easy to foresee, favourable circumstances for the development of mosquitoes, which, indeed, at that time were very abundant in Rio de Janeiro.

In addition to this, the population was almost entirely composed of individuals in the maximum state of receptivity for the yellow fever, this being the first time that such a disease appeared in their midst. Excepting the negroes, the rest of the population not even by heredity could enjoy immunity. It is not surprising, therefore, that, in face of this state of affairs, the first two cases of yellow fever set forth above should give origin rapidly to a dreadful epidemic. In March 1850 it reached its acme. In this month, according to a celebrated Brazilian physician who witnessed the epidemic, the aspect of the city was lugubrious and lamentable; the burials followed upon each other incessantly to such a point that in the churches there was no more space to bury the dead. There was not a single street but was turned into a hospital. On the 15 th of that month, the number of deaths was over 90. Fortunately from this date, the epidemic began to abate being considered extinct in the city at the end of May. It was not the same, however, in relation to the ships the crews of which continued to suffer from its havoc until August or September, naturally because fresh ships coming from Europe and America, bringing on board receptive individuals, constantly added to the fire that was extinguishing, the necessary combustible to maintain its activity.

In the years that followed, fresh epidemics were observed, but of a much milder character, there having been even years in which only sporadic cases existed and in others in which the disease did not appear in the death statistics of Rio de Janeiro, as can be seen in the following table that comprises the period in from 1850 to 1868:

YEARS	DEATHS
1850	4160
1851	475
1852	1943
1853	853
1854	22
1855	3
1856	101
1857	1868
1858	1545
1859	500
1860	1249
1861	247
1862	12
1863	7
1864	5
1865	—
1866	—
1867	—
1868	3

By the inspection of the preceding figures one can verify what we affirm, being able even to add that practically, the disease ceased to exist from 1862 to 1868, that is, during seven years. This is an interesting fact of the history of the epidemiology of yellow fever among us. How can it be explained? How did the disappearence of this disease take place?

One of us has already had the opportunity to discuss this question, showing that said disappearance took place spontaneously as a natural and inevitable solution of every epidemic when it penetrates into a locality the population of which does not renew itself.

Observation, indeed, has demonstrated when an epidemical disease invades any locality there are individuals in a state to receive it and others who are refractory to it. It attacks the former, beginning with those who are the most receptive, kiling same and immuning others against future attacks,

If by chance the population remains stationary, that is, if fresh elements in a state of receptivity do not come to furnish the disease with necessary combustible for its maintenance, it diminishes little by little and ends by disappearing.

This was just what happened in Rio de Janeiro as is easily demonstrated. When the yellow fever broke out amongst us for the first time in 1849, the population of Rio de Janeiro was: 266,466 inhabitants, but as soon as the epidemic commenced to develop itself this number rapidly began to diminish for the exodus of individuals who abandoned the city was enormous.

The greatest proof of this statement is supplied to us by the comparison between that population and that which was censured in 1856, i. e. 7 years afterwards, which was a little over 151,000 inhabitants. The difference being therefore about 1,14,000.

It is requisite still to note that a great part of the population consisted of negroes an africans, who enjoy, as is known, a certain degree of immunite from yellow fever, a fact that was also verified among us, for according to the evidence of a Brazilian physician who accompanied the epidemic of 1850, among them the disease was, most benevolent, not passing, in general, the first period and seeming to be in most cases and ephemeral fever of short duration Therefore, when the first exodus took place, it was obvious that the blacks not having means and being slaves, could not withdraw, so that, on this side, probably, there was no great modification in the constitution of the population that remained in the city. Consequently, the number of inhabitants having diminished, the number of those who by nature were refractory to the disease increased. Therefore in 1850, alone, according to the calculations of creditable historians no less than 80,000 persons were attached by yellow fever, only remaining immune against it those who did not succumb. If tó that number we add those who were attached in the previous epidemical outbreaks, it is clear that from 1862, if there were still inhabitants in condition to contract the disease, their number must have been so reduced that practically, it could not have had any influence upon the appearence of the evil. One of the most striking proofs of this fact in that during the whole period from 1862 to 1868, cases of yellow fever always existed on board the ships anchored in the harbour, the individuals attacked being removed to the maritime hospital of Jurujuba situated in the City of Nictheroy, where the dead were buried, this being the reason that they did not figure in the death statistics of Rio de Janeiro. Therefore if the yellow fever existed in the harbour, and if, dispite the free communication between the ships and the city, the disease did not spread in the latter, it was evidently, because, it did not find among the inhabitants a favourable soil for its development

To the proportion,however, that, the yellow fever was disappearing, the migratory current to Brazil was reestablishing itself and to its capital individuals from the provinces and abroad began to flock, an afflux that became greater after 1870 because in this year, the war with Paraguay which began in 1865, having terminated, not only the return of the troops commenced, (consisting almost entirely of provincials, that is, individuals not immune against yellow fever), but also the commercial life of the nation began to normalise itself, it having naturally, been paralyzed by the outbreak of war.

On the other hand, the idea of the abolition of slavery made strides and the perspective of its approaching termination caused a great reduction in the traffic of slaves who began to be substituted by the foreign settlers; this circumstance constituting one more important factor in the increase of the migratory current to Brazil.

As a logical consequence of the preceding facts, there was a reappearance of the epidemics of yellow fever in Rio de Janeiro in 1869, when 272 deaths were registered, and in the following year 1870, 1,118, these outbreaks not ceasing from then onwards,

In the following statistical data there will be found separated per year, the deaths caused by yellow fever in Rio de Janeiro from 1869 to March 1903, when the specific prophylaxis of that disease was initiated among us :

YEARS	DEATHS	YEARS	DEATHS
1869	272	1887	137
1870	1 118	1888	747
1871	8	1889	2 156
1872	102	1890	719
1873	3 659	1891	4 456
1874	829	1892	4 312
1875	1 292	1893	825
1876	3 476	1894	4 52
1877	282	1895	818
1878	1 176	1896	2 929
1879	974	1897	159
1880	1 625	1898	1.078
1881	257	1899	731
1882	89	1900	344
1883	1 608	1901	299
1884	863	1902	984
1885	445	1903	426
1886	1 449	—	—

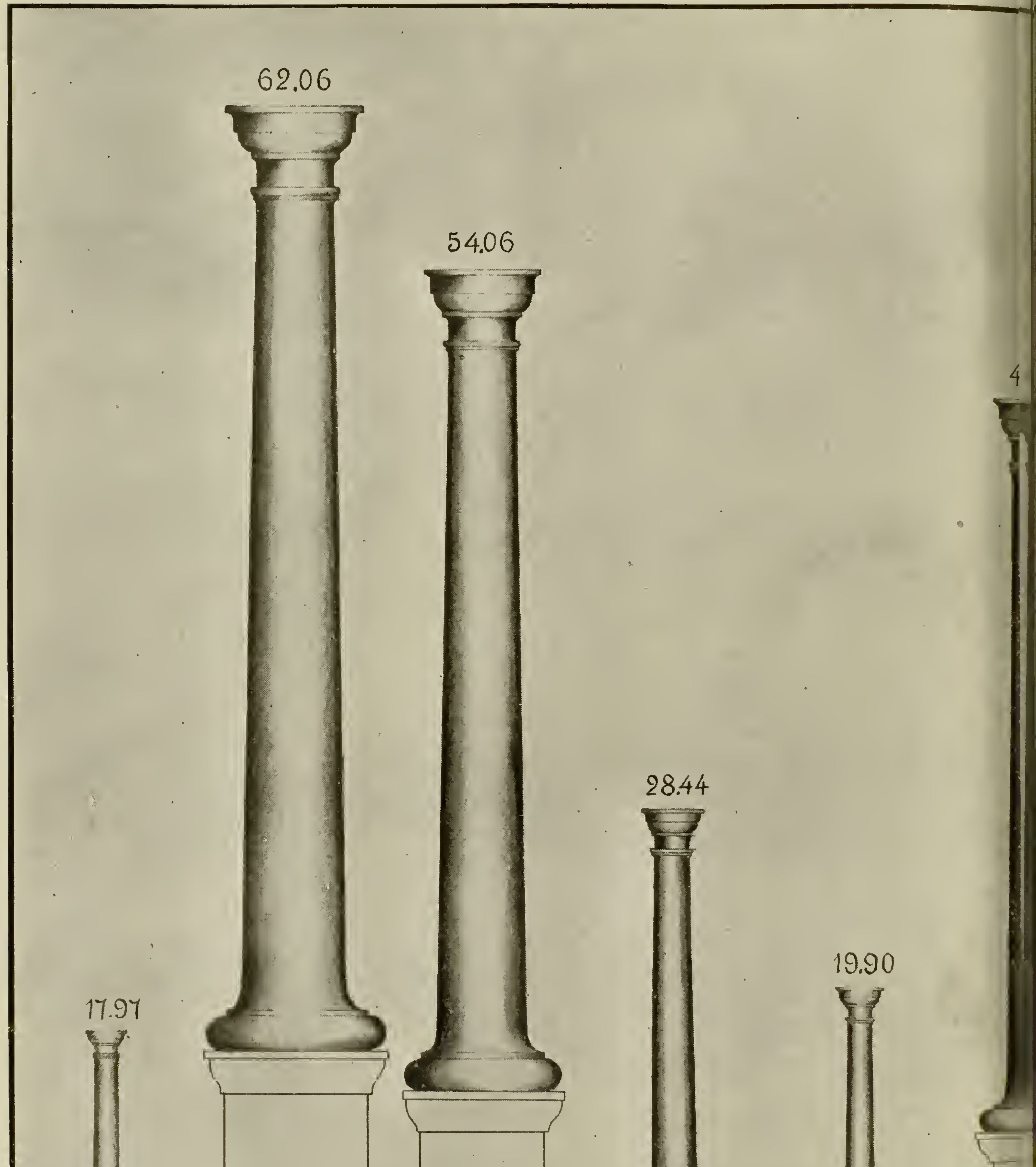
PROPHYLAXIS

Until 1903 the yellow fever was fought by means usually employed against contagious diseases, and which consisted principally in isolating the patient from the community and in disinfecting the house and the objects used by the said patient as is easily seen by the preceding statistics; such means produced no results, it being certain that the temporary disappearance of the disease from 1862 to 1868 and the great remissions that were noted at times in its evolution were the fruit not of the prophylactic measures employed, but of the want of individuals

MORTALITY FROM YELLOW FEVER IN

1868

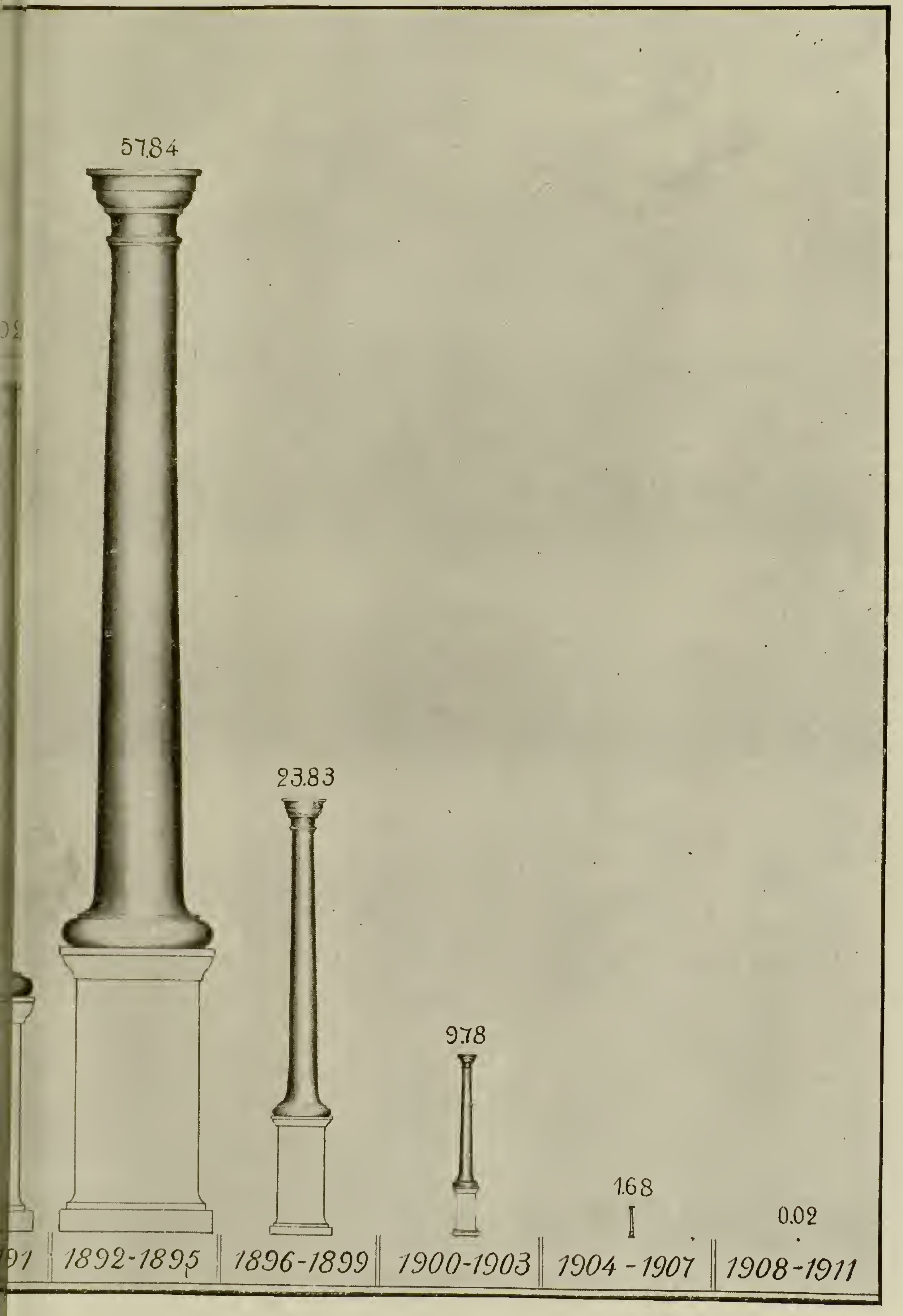
Quadriennal death-rates



O DE JANEIRO (URBAN DISTRICTS)

911

10.000 persons living



in a state of receptivity and being in condition to entertain the epidemics. The proof of this statement is that the great epidemical outbreaks coincided always with the increase of immigration and the remissions in their turn followed the great epidemics, that is, they took place when, in virtue of the occurence of an epidemic, the new part of the population, not yet climatised, as it is the custom to say, remained immune.

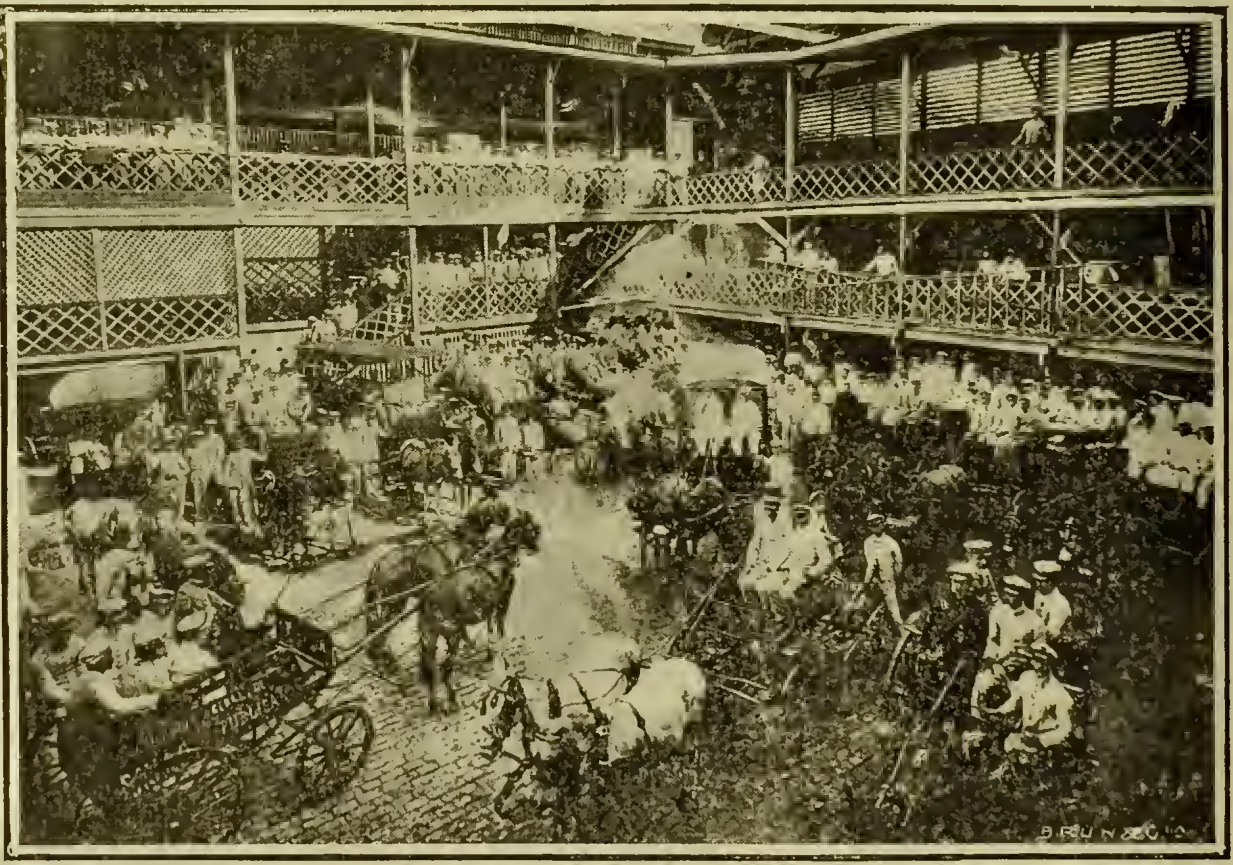
It was sufficient, however, that accumulation in the city of receptive individuals, either by birth or by immigration, became renewed, for the disease to break out again under an epidemical form and greater the number of those individuals greater the violence.

The first attempt made among us, in relation to the specific prophylaxis of yellow fever based upon the so-called «havaneza theory» dates from the middle of 1902. In this year, a sanitary inspector of the General Board of Public Health, now dead, Dr. Carneiro de Mendonça, enraptured with the studies made in Havana by American Scientists to whom is due the great discovery of the part played by the mosquito in the transmission of yellow fever, proposed to experiment among us the application of the same principles. On the 21 t of February 1903 the eminent Prof. Dr. Nuno de Andrade, then General Director of Public Health, resolving to make a beginning with this special prophylaxis, ordered the incorporation of the service of extinction of mosquitoes with the Inspectorate of Isolation and Disinfection, directed by one of us, to which it was incumbent to supply every thing it needed. The elements conceded for such an important task were so scanty that nothing could be done.

Under these conditions, it can be said that the initiation of the new prophylaxis took plaee in April 1903, the General Director being Dr. Oswaldo Gonçalves Cruz. This eminent Brazilian was nominated to that post on the 23rd March of the same year and as he was well versed in everything that had been done in Havana in relation to the extinction of yellow fever, he undertook the obligation with our government to make it disappear also from Rio de Janeiro.

And with this resolution he began at once to act, forming the «Brigade against the mosquitoes», in the beginning, of a provisory character and later on, definitive, under the denomination of Inspectorate of the Service of Prophylaxis of Yellow Fever wich soon became one of the greatest sections of the General Directorate of Public Health.

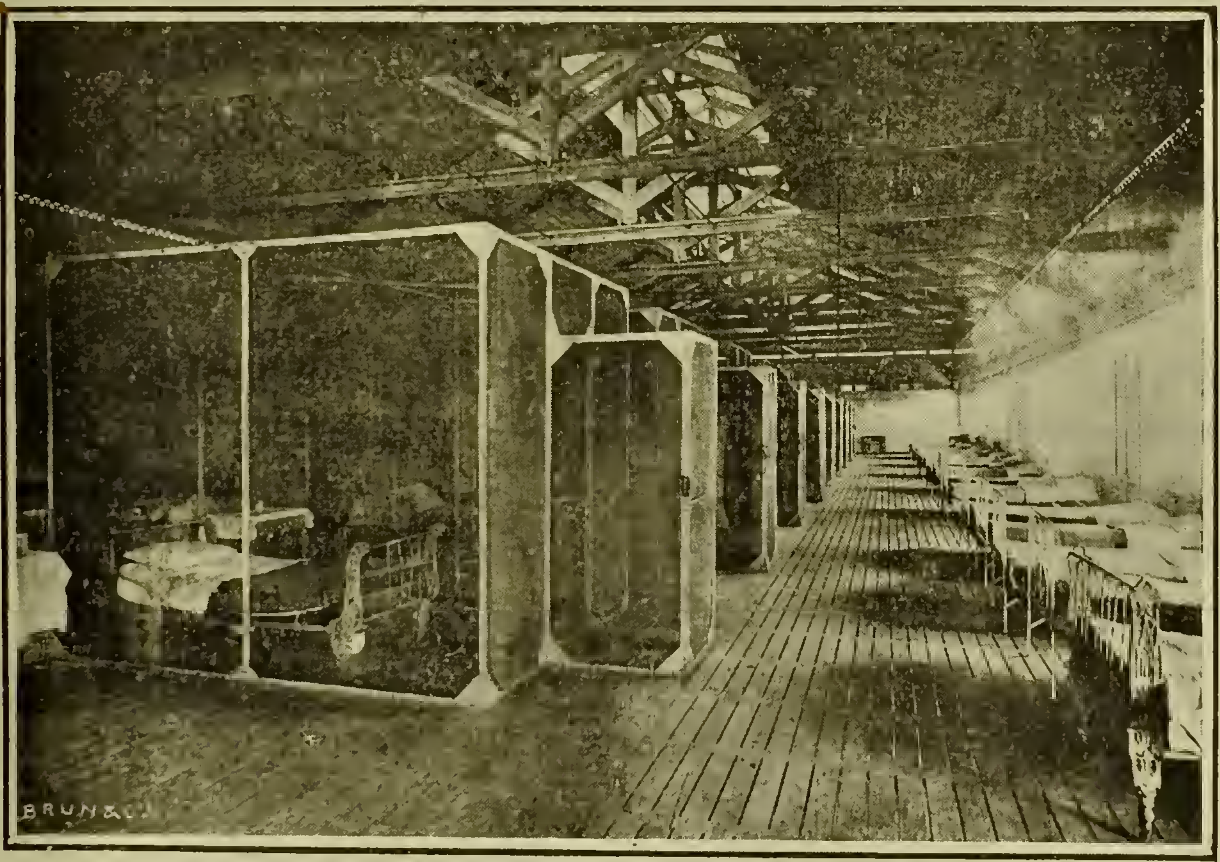
The Inspectorate consisted of one Inspector, ten auxiliary doctors, seventy medical students, nine foremen of the staff of two-hundred men, eighteen health officials of the first class, eighteen of the second class, eighteen carpenters and stonemasons, firemen, coachmen and workmen in numbers proportionate to the necessities of the service, and was divided into two sections: the Section of isolation and expurgation and the Section of Police of centres of fevers, each one with attributions and duties defined and precise, their services being executed without interruption, every day, beginning at 8 o'clock a. m. and continuing until night, according to the requirements of the occasion.



Prophylaxis of yellow—fever. Brigade against mosquitoes.

The first Section, i. e. that of Isolation and Expurgation had to its charge the isolation of the patients in the dwellings and their removal to the Hospital of S. Sebastião, which was made either at the request of the patient himself or by compulsion, when the dwelling afforded no rigorous isolation. As soon as a case of yellow fever was notified, positive or suspect. a gang of men of the Brigade against the Mosquito was sent to the house acting under the orders of one of the auxiliary Doctors, the indispensible preliminary act being the isolation of the patient by means of a curtain..

In each case the inspector of the service himself or through the intermediary of his auxiliaries, decided upon the possibility of the isolation in the dwelling or the necessity of removal and, in the shortest space of time, the patient had to be isolated or removed to the hospital of S. Sebastião, that was conveniently prepared for this purpose.



S. Sebastião Hospital — Isolation of yellow-fever patients.

The removals were always made in vehicles furnished by the Inspectorate, under the direction and vigilance of an assistant doctor, who at once ordered the gang under his orders to destroy the larva and mosquitoes in the house and grounds, extending this service to the adjacent premises when the isolation was resolved upon; wire-nets with threads not larger than and a half millimeter were duly placed in the windows of the rooms occupied by the patient, and when permitting, disposed in a manner to allow the free movement of windows and shutters. The windows which were not protected by means of nets, were kept closed, on them being affixed an interdict signed by the assistant doctor.

The doors communicating with the rooms of the patient were closed and interdicted, one room however being fitted with a special device so that one door being opened the other should close automatically. Moreover, whatever openings existed in the rooms of the patient were caulked or protected with nets. At once, both in the infected building and in the adjacent ones successive burnings of sulphur and pyretic were effected, as many as were necessary for the extinction of the mosquitoes that might have been infected by the patient, no thought being bestowed, in this expurgation upon the clothing and objects of use that were in the rooms of the patient.

The pyretic was burned in proportion of two to 10 grams per cubic metre aud the sulplhur in proportions of 10 grams; the same however, could be raised to 20 grams in the hollows, of the roofs, and rooms where it was impossible to stop up the holes, the burning of both lasting at least an hour. In order to have the certitude of the effiicacy of the specific disinfection, carried out in the manner described above, in each house which had to undergo this, were placed in one or more of the rooms and in different heights, small cages of metal netting containing mosquitoes, serving in this way, as witnesses.

In order that the destruction of the mosquitoes should be complete all parts of the house were rigorously stopped up, paper, cloth, and gum being used for this purpose, special precaution also being taken with the furniture and objects which might be damaged by the sulphur. Besides this, before commencing the disinfection all the drawers and cupboards were opened, clothes shaken, so that not one mosquito in them should be able to take shelter from the powder of pyrethrum caucasicum.

In addition to the preceding measure all the recipients of water existing in the house, containing or not larva, were emptied and rigorously cleansed. When the recipients were dug in the ground their filling up with earth was ordered just as the other recipients, declared useless by the occupier or owner, were distroyed. When these means could not be utilised and the water had to be preserved, then oily liquids were employed that could form on the surface a sheet or thin skin absolutely impermeable, preference being given to kerosene or eucalyptus oil when the water was destined for domestic usage.

The isolation of the patient was rigorously maintained until the maximum of 7 days counting from the first day of the disease, at the conclusion of which, the doctor ordered the removal of all the apparatus employed, and there carried out one last burning of the powder of pyrethrum caucasicum. The second gang was charged with the superintendence of the centre of disease, under the direction of five assistant doctors, this inspection consisting of fortnightly visits to the parts of the city in which one or more cases had been manifested, for the purpose of impeding there the breeding of mosquitoes.

This was obtained:

a) — by destruction of the eggs, larvae, and nymphs (pupa) existing in deposits of water.

b) — by elimination of the useless water deposits

c) — by protection of the deposits that could not be removed or destroyed.

It was equally incumbent upon this section of the Inspectorate to visit the open spaces and Public places with the purpose of promoting:

a) — the filling of pools, puddles and excavations.

b) — the levelling of lands and their drainage.

c) — the regularisation of waterways.

d) — the stocking of the lakes, ponds, etc., with fishes of the most voracious species with the object of impeding the breeding of mosquitoes.

In order to complete this rigorous and particular system of prophylaxis, *medical vigilance* was instituted, consisting of daily visits, made by physicians of the General Board of Public Health, not only to the persons living in the houses of the patients, but also to those living in the adjacent buildings and who had undergone the expurgation. These visits, which were made during 7 days counting from the first day of the attack of the patient originating the infection of the dwelling, were intended to verify at once any fresh case that might appear.

The first strict isolation of a patient of yellow fever was made on the 20th April 1903 and from this day the prophylaxis of that disease in Rio de Janeiro obeyed exclusively the principles of the so called — Havaneza Theory —, the brilliant results of which also here were soon confirmed. Effectively, as can ben seen in the statistic data that we present herewith, from that date the yellow fever commenced to decline, until it entirely disappeared from our capital.

— Cases and deaths of yellow fever of 1903 to 1912.

MONTHS	1903		1904		1905		1906		1907		1908		1909		1910		1911		1912	
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
JAN.	249	133	15	2	16	3	17	6	2	1	1	—	—	—	—	—	—	—	—	—
FEB	228	142	19	7	34	13	13	9	3	1	—	—	—	—	—	—	—	—	—	—
MAR. . . .	305	151	18	7	48	23	17	6	6	6	1	1	—	—	—	—	1	1	2	2
APR. . . .	188	99	12	8	107	59	12	8	21	14	—	—	1	—	—	—	—	—	2	1
MAY. . . .	44	24	18	10	163	64	2	2	10	6	1	—	—	—	—	—	—	—	—	—
JUN.	21	10	11	4	113	61	1	1	4	4	2	3	—	—	—	—	—	—	—	—
JUL.	16	9	12	4	57	26	4	2	7	4	—	—	—	—	—	—	—	—	—	—
AUG. . . .	8	4	1	1	21	9	—	—	3	1	—	—	—	—	—	—	—	—	—	—
SEP.	7	4	6	1	7	6	1	1	1	1	—	—	—	—	—	—	1	1	—	—
OCT. . . .	6	2	—	—	10	5	3	3	—	—	—	—	—	—	—	—	—	—	—	—
NOV. . . .	2	2	4	3	13	8	2	1	4	1	—	—	—	—	—	—	—	—	—	—
DEC. . . .	4	4	2	1	19	12	3	3	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL .	1118	534	118	48	608	298	75	42	61	39	5	4	1	—	—	—	2	2	4	3

The observation of the preceding table shows an increase of mortality and of the number of notifications in 1905, that is, two years after the initiation of the new prophylaxis. This increase was owing, above all, to the revival of two centres of disease that were extinguished in the previous year, one on the Castello hill and the other in the district of Gambôa the first patients of which were notified as being of the plague.

In consequence of this error, the intervention of the especific prophylaxis was delayed and already many individuals were attacked. But this fact, far from discrediting the value of the doctrine on the contrary, confirmed it, because said theory put into practice in the two disease centres to which we have just alluded, the same were immediatly circumscribed and exterminated.

The last cases of yellow fever observed in the city of Rio de Janeiro itself occurred in 1908 to the number of 5. Since that year the cases registered, all came from the northern ports of Brazil and the individuals attacked were already patients when they landed here. It can be said therefore that yellow fever has entirely disappeared from Rio de Janeiro. Will this fact be a reproduction of what happened during the years between 1862 and 1868, that is, have we to treat, by chance, of an *expontaneous extinction* of the disease? We can, with assurance, affirm the contrary. In the first place because the value of the specific prophylaxis, according to the havaneza theory, is more than proved by repeated experiences in various towns and in various occasions; and in the second place because since 1903 until now, Rio de Janeiro has entered upon a phase of great progress, having attracted, not only from abroad, but also from other parts of the country, a great current of immigration, composed almost entirely of receptive individuals.

And yellow fever existing in some towns of the north of Brazil, is there a probability of its propagation to Rio de Janeiro? We can equally guarantee the contrary, given our actual organisation of sanitary protection, In fact the General Board of Public Health is so well fit and prepared to act that, should a centre of disease appear it would be at once suffocated. Moreover, the formation of a disease centre will not be easy because, upon all individuals coming from suspected places and landing here, is exercized the most rigorous medical vigilance, during the maximum period of incubation of the disease. For this purpose the General Board of Public Health disposes of a staff of 75 sanitary inspectors, to whom is communicated the residence of each one of those individuals. Besides this, all ships arriving in the port of Rio de Janeiro are rigorously inspected, any suspected patient that may be on board being removed immediatly to the hospital of isolation. In the same way, no vessel, coming from a suspected port, can go alongside the quays of the port without undergoing first a rigorous disinfection, with the aim of exterminating the mosquitoes that may, by chance, be found on board.

The yellow fever being extinct in Rio de Janeiro it is now only necessary to exterminate it in some northern towns of Brazil, where it still exists, although in a mild form, rather as a sporadic disease than a real epidemic. This work has already begun, having been initiated towards the end of 1910, in the State of Pará, its capital being one of the northern cities to which we have just alluded.

In order to extinguish the yellow fever, the State Government invited Dr. Oswaldo Cruz, who for this purpose organized a commission under the direction of Dr. João Pedroso de Albuquerque, secretary of the General Board of Public Health, and composed of physicians and employées who had served with Dr. Oswaldo Cruz in Rio de Janeiro and having consequently a wide experience of the duties they were going to perform. The commission commenced the task of cleansing the capital of the State in November 1910 and a few months afterwards they had the satisfaction of seeing their efforts crowned with so great a success that in October of the following year, they returned to Rio de Janeiro leaving the disease completely extinct. To avoid the importation of fresh cases, coming from other towns, the State Government maintained the service in working order under the direction of one of the physicians of the commission, Dr. Mauricio de Abreu, who still remains there duly authorised by the Federal Government.

At the present moment, the governments of Amazonas, Pernambuco and Bahia are also organizing the services of extinction of the yellow fever in the respective cities, the Federal Government having intervened in the State of Espirito Santo for the same purpose, at the request of the Governor, and owing to some cases of the disease having appeared in the small town of Leopoldina, some leagues distant from Victoria, the capital of the State. Thanks to this intervention the disease was promptly extinguished, it being hoped that shortly the same may take place in the other States.

Herewith we present a statistical table in which will be found the mortality from yellow fever in Rio de Janeiro from 1850 to 1911, distributed according to the years and months.

Mortality from yellow-fever in Rio de Janeiro

1850-1911

Urban districts

YEARS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMPER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
1850....	—	—	—	—	—	—	—	—	—	—	—	—	4.160
1851....	14	37	60	165	98	28	9	7	4	19	26	8	475
1852....	243	70	303	403	325	189	93	62	62	37	47	109	1.943
1853....	150	176	142	153	82	73	26	29	7	7	6	2	853
1854....	2	6	4	2	4	—	—	1	1	1	1	—	22
1855....	—	—	1	1	1	—	—	—	—	—	—	—	3
1856....	—	—	2	20	23	9	6	5	2	—	13	21	101
1857....	226	421	615	298	133	80	27	7	5	6	17	33	1.868
1858....	163	654	412	141	92	35	23	9	4	2	2	8	1.545
1859....	34	109	128	98	48	32	9	11	2	5	8	16	500
1860....	32	108	319	340	209	96	47	21	16	19	11	31	1.249
1861....	47	72	47	37	25	11	5	1	—	—	2	—	247
1862....	1	2	—	2	—	—	1	—	—	1	1	4	12
1863...	1	—	1	1	1	—	—	—	—	—	1	2	7
1864....	1	2	2	—	—	—	—	—	—	—	—	—	5
1865....	—	—	—	—	—	—	—	—	—	—	—	—	—
1866....	—	—	—	—	—	—	—	—	—	—	—	—	—
1867....	—	—	—	—	—	—	—	—	—	—	—	—	—
1868....	—	1	—	—	—	—	1	—	—	1	—	—	3
1869....	1	—	—	6	13	67	51	33	17	16	14	54	272
1870....	203	402	273	81	98	39	11	7	—	—	2	2	1.118
1871....	2	1	1	2	—	—	2	—	—	—	—	—	8
1872....	1	—	—	—	1	3	1	—	1	8	16	71	102
1873....	949	1.168	953	281	180	83	20	3	2	5	2	13	3.659
1874....	16	51	168	297	165	69	25	5	4	6	10	13	829
1875....	23	168	385	301	244	104	37	7	5	4	3	11	1.292
1876....	122	319	1.405	1.019	395	147	41	12	6	4	4	2	3.476
1877....	3	10	74	35	40	12	4	15	7	8	18	56	282
1878....	156	420	331	130	60	23	18	4	8	10	3	13	1.176
1879....	101	227	226	169	81	54	43	26	11	8	9	18	974
1880....	138	496	471	273	115	58	18	9	5	5	13	24	1.625
1881....	50	67	46	26	25	14	13	6	1	2	4	3	257
1882....	3	13	23	27	12	8	1	1	1	—	—	—	89
1883....	8	91	335	598	300	111	69	34	12	6	15	29	1.608
1884....	79	208	253	210	68	15	12	6	2	—	6	4	863
1885....	15	28	58	51	65	57	44	20	18	10	21	58	445
1886....	201	351	483	304	74	23	9	2	—	1	—	1	1.449
To transfer	2.986	5.678	7.520	5.470	2.976	1.440	666	343	203	191	275	606	32.517

YEARS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
Transfer.	2.986	5.678	7.520	5.470	2.976	1.440	666	343	203	191	275	606	32.517
1887....	6	18	28	37	18	8	1	3	2	2	1	13	137
1888....	30	39	89	128	116	89	50	18	15	16	49	108	747
1889....	510	719	539	142	97	61	27	15	8	8	10	20	2.156
1890....	57	103	187	169	109	38	22	6	4	5	9	10	719
1891....	51	357	1.026	960	600	421	190	106	62	105	195	383	4.456
1892....	1.006	1.290	1.404	410	147	35	14	1	1	1	2	1	4.312
1893....	4	57	108	135	172	141	73	48	28	9	13	37	825
1894....	371	1.351	1.978	695	305	114	14	12	3	2	—	7	4.852
1895....	27	41	86	141	104	77	51	29	23	17	56	166	818
1896....	524	731	1.002	445	136	37	20	9	4	4	9	8	2.929
1897....	28	33	37	30	17	6	3	—	1	—	1	3	159
1898....	22	90	255	287	186	78	65	34	19	13	8	21	1.078
1899....	99	170	204	91	48	25	11	10	11	14	14	34	731
1900....	42	64	78	61	36	28	9	7	5	6	4	4	344
1901....	13	41	69	64	37	17	14	9	10	13	8	4	299
1902....	32	64	165	178	154	131	79	50	27	10	18	76	984
1903....	133	142	151	99	24	10	9	4	4	2	2	4	584
1904....	2	7	7	8	10	4	4	1	1	—	3	1	48
1905....	3	13	23	59	64	61	26	9	6	5	8	12	289
1906....	6	9	6	8	2	1	2	—	1	3	1	3	42
1907....	1	1	6	14	6	4	4	1	1	—	1	—	39
1908....	—	—	1	—	—	3	—	—	—	—	—	—	4
1909....	—	—	—	—	—	—	—	—	—	—	—	—	—
1910....	—	—	—	—	—	—	—	—	—	—	—	—	2
1911....	—	—	1	—	—	—	—	—	1	—	—	—	—
Total..	5.953	11.018	14.970	9.631	5.364	2.829	1.354	715	440	426	687	1.521	59.071

II

PLAGUE

The first appearance of the Plague dates back to the remotest epochs of history.

In the Bible, and in the writings of Virgil, Ovid and other ancient writers references to prevailing epidemics are found 1.200 B. C.

THUCYDES describes the plague in Athens, of which he was an eye-witness, and RUFUS OF EPHESUS in the 4th book of Oribase, mentions the Bubonic plague called pestilential, mortal, and of acute action in Lybia, Egypt and Syria: « *Pestilentes bubones maxime lethales et acuti, qui maxime circa Lybiam et Aœgyptum et Syriam observantur* ».

Without perplexing ourselves with chronological quotations, we can affirm that this disease manifested itself in Europe in 524 A. D., causing atrocious and tremendous devastations. From the eleventh to the fifteenth centuries, 32 times it developed epidemically and, from 1347 to 1350, alone, the horrible *Black Death* or the *Indian Plague* destroyed 25 millions of inhabitants in Europe.

In the eighteenth century it appeared in Egypt, devastating and deadly, 19 times; and in Europe, in 1720, it ravaged Marseille and Toulon, carrying off 87,659 inhabitants. Later on it spread to the southern and western provinces, causing 300,000 deaths. Mortiferus epidemics followed one another in many European and Asiatic countries, in the XIX century, principally after the wars, the famines, and physical and moral distreses of all kinds. In 1894 it raged violently in Hong-Kong, causing 180.000 victims and from Asia it spread to several parts of Europe, America, Africa and Australia.

The frequent and awful scourges of this infectious disease, that pertinaciously developed all over the world, in the form of epidemics, more or less prolonged and devastating, with clear intervals, preoccupied to such an extent the governments of the principal nations, that they resolved to convoke several conferences and international congresses. At these the most eminent scientists have established the true principles of hygiene against this epidemical and contagious disease, caused by the specific bacillus of Yersin and Kitasato.

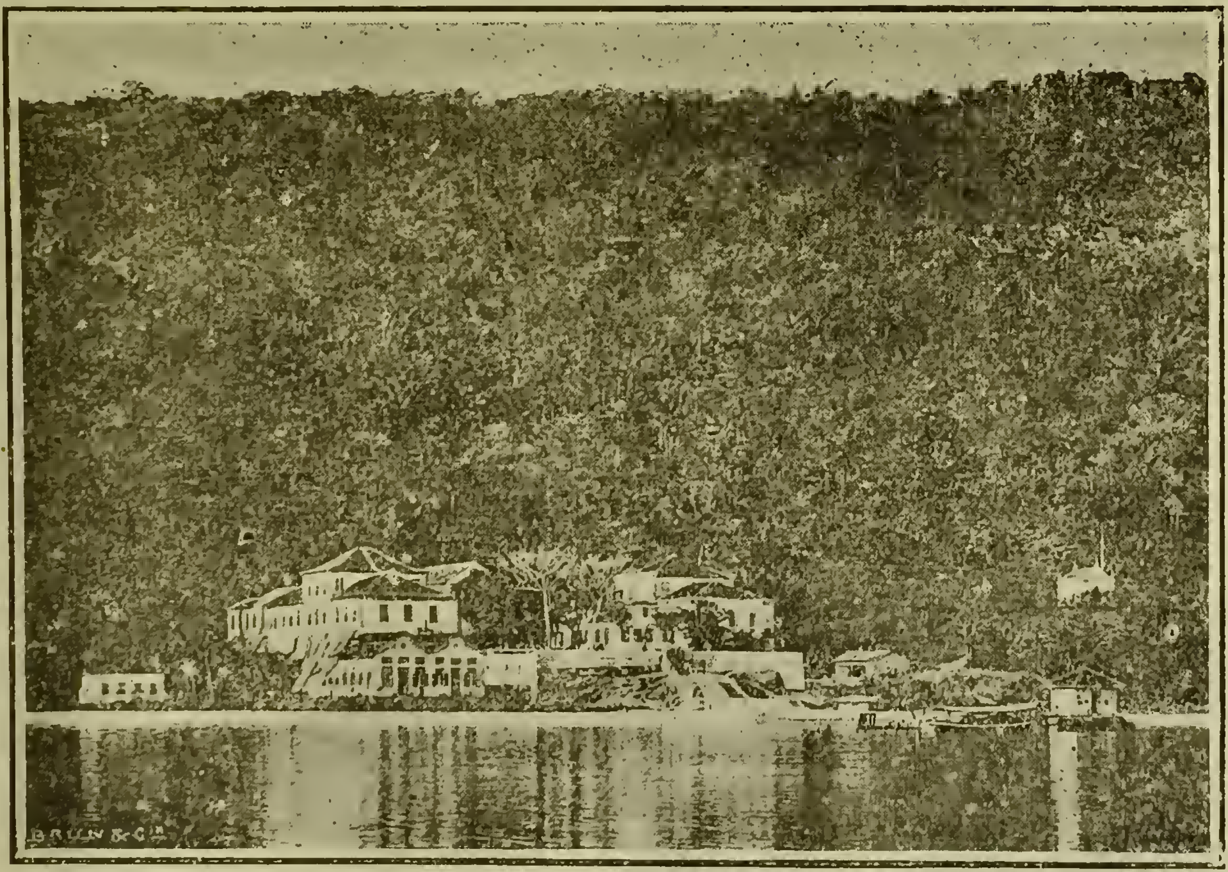
Until 1889, plague was absolutely unknown in Brazil, when on the 18th of October of that year, it made its first appearance in the city of Santos, in the State of São Paulo, it being impossible, with certanity, to affirm its origin of importation.

It spread at once to the city of São Paulo, capital of that State.

In Rio de Janeiro the first case manifested itself on the 8th of January 1900, in the person of a lad who inhabited a humble dwelling without hygienic conditions, on the hill of Vallongo n. 3

The suspected case being notified one of the authors of this modest and unpretentious work, who in that epoch held already the post of Inspector of the service of isolation and disinfection in the city of Rio de Janeiro solicited from the eminent and learned Brazilian Dr. Oswaldo Cruz, who was then dedicating himself with competence and interest to the studies of bacteriology, the examination of the suspected case, the result of which was textually the following : — Rio de Janeiro 8 January 1900. — The patient of the hill of Vallongo n. 3, presents clinically the symptoms of the plague in the form pneumo-septicemic. There is a great and painful inflammation of the ganglions of the anterior wall of the right axilla, with a great periganglinous exsudation. In the dorsal region there is a pustule, containing serosity. An aspirative puncture was made in one of the ganglions, in the periganglinous exsudation and in the pustule. With this material the microscopical culture and preparations were made. We did not obtain spittle for microbiological experiment. The examination of the direct products reveals the presence of a *coccus-bacillus*, in pure culture, of a morphological character, and colouring reactions of the plague bacillus. Bacteriologically the diagnosis depends upon of the result of the cultures and of the animal experimentation. From the point of view of « Hygiene », one ought, therefore, relying on clinical and microscopical data, to act as if treating with a confirmed case of plague, which, strictly, could already be admitted, considering that so far, no human disease is known with the clinical aspect of the case in hand and in which the microscopic examination reveals in the *ganglions* a microorganism with the characteristics of that observed in the material collected in the patient we examined. (Signed) — Dr. Gonçalves Cruz ».

After such a profound and competent scientific report, the patient was transported to the hospital of isolation of S. Sebastião, where two days afterwards he died. In the adjacent house another person was attacked by the disease, dying likewise in a short time.

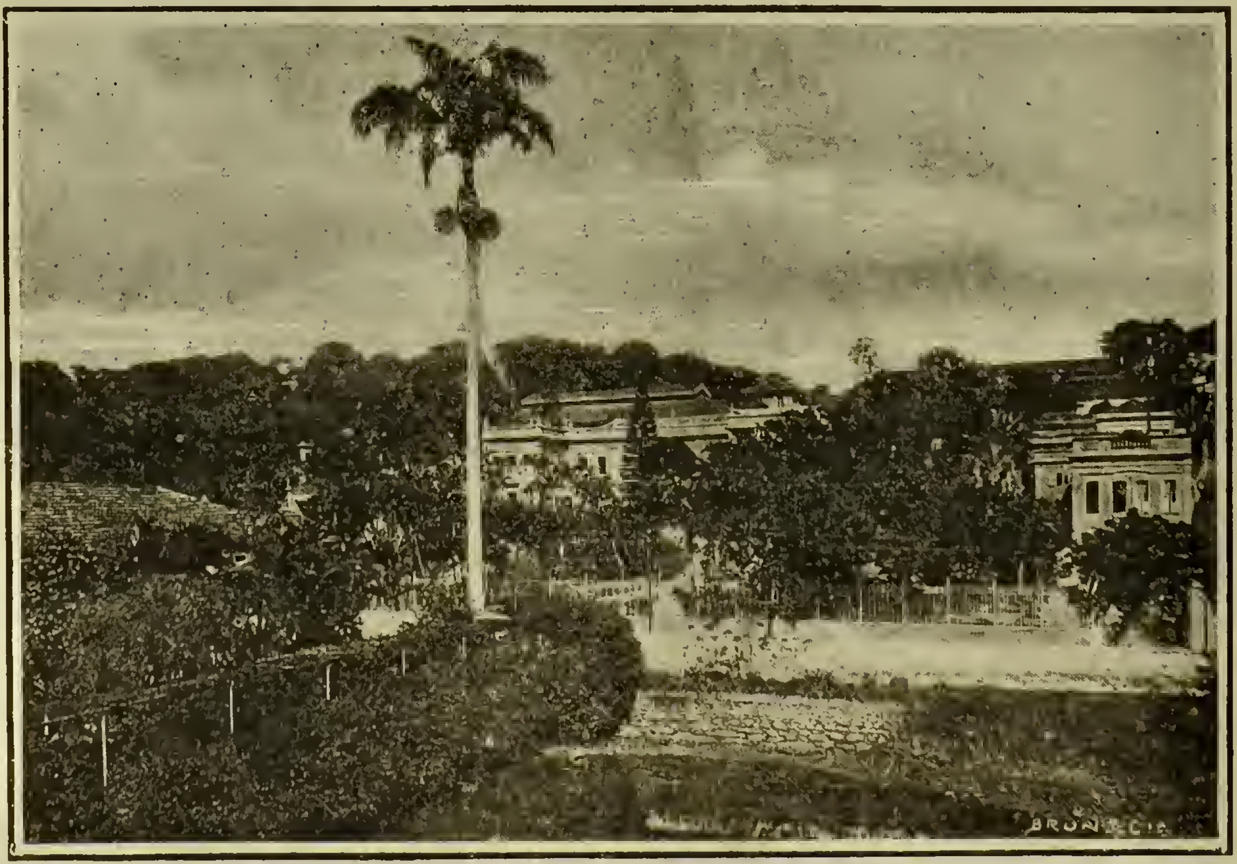


Paula Candido's Hospital (Jurujuba)

The General Board of Public Health judged it a duty of probity and loyalty to propose to the Government the immediate declaration of the city of Rio de Janeiro being suspect, which was made on the 13th of January. With the greatest care and scientific rigour were put into practice, not only the measures of isolation and medical vigilance of the persons who may have had contact with the patients, as also the energic and repeated disinfections of the infected habitations and their neighbours, in the whole contaminated district, and furnitures, bed-clothing, objects and utensils existing in the houses referred to, were disinfected, those useless and worthless being destroyed.

So important, careful and energetic were the precautions taken, that 14 days afterwards, the Government considered the port and the city of Rio de Janeiro clean, for, no other case, suspected or corroborated, had been recorded.

In April of the same year, nevertheless, two fresh cases of plague took place, confirmed by the bacteriological examen. The patients, removed to the hospital of Jurujuba, succumbed in the first fortnight of the same month. The city of Rio de Janeiro was thereupon declared infected, cases of plague breaking out from time to time, becoming indeed, epidemical in June 1900, in which month 137 corroborated cases were recorded 78 on which proved fatal.



S. Sebastião-Hospital.

How did the importation of the Plague to Brazil occur?

In 1899, the horrible disease spread through the world, becoming epidemical in the town of Oporto in Portugal. Crossing the Atlantic, it raded in Assumption, in Paraguay, the first cases being taken for typhoid, meningits and pneumonia.

In 1889, Drs. Agate and Medina expressed themselves upon the cases of the disease in Assumption, which they considered to have been imported by the S. S. *Centauro,* thus:

«The S. S. *Centauro*, navigating regulary in our great rivers, shipped, in Montevideo, a load of goods which came from India. It was on board of this vessel that the first cases of this exotic disease manifested themselves.

Among other goods transhipped from the sailing vessel *Zeir* to the *Centauro* in the port of Montevideo there was a lot of bags of rice coming from India. We were able to gather the following information showing exactly the route taken by the germs of the disease, from Asia to the new Continent.

The *Zeier* shipped in Rotterdam that cargo of goods. The bags were placed in one of the holds which remained closed until the arrival at Las Palmas. There, it was opened for the first time some dead rats being found inside. Later on, two of the crew became ill and one died, without, unfortunately, it being possible for us to establish the nature of the disease, the vessel not having called at our port in the course of the voyage.

The *Centauro* afterwards went to Buenos Aires, completing there its cargo and arrived, at last, at Assumption, on the 26th of April 1899, after various calls at Argentina and Paraguay ports. Three of the crew became ill during the voyage. One of them presented such alarming symptoms that the captain feared a fatal climax near. A sailor, *Julian Figueiredo*, who was the first attacked, died in Assumption, the morning following his landing, that is, on the 28th of April. The second patient, *Arturo Insaurralde*, engineer, succumbed on the 1st of May, and the third one, *Theodoro Rodriguez*, also an engineer, died on the 5th of the same month. They were buried, according to the Civil Registry Office as having died of *acute* *pneumonia, typhoid fever* and *pleurisy.* The very special circumstances, connected with the deaths of these individuals belonging to the same crew and the strange comments provoked thereby, caused the Medical Board of Assumption to believe that something irrregular was happening on board. The President of the Medical Board fearing that it migt be yellow fever, ordered an enquiry to be made to find out the cause of death.»

It was acknowledged that the cases in question were of the Plague.

From Paraguay the horrible disease crossed to the Argentina Republic, attacking the towns of Rozario and Baenos Aires.

The epidemic of Oporto began in June 1899, augmenting considerably in September and October, in the district of *Fonte Taurina*, unhealthy and filthy; there was however no possibility of forming an exact conclusion regarding the origin of its importation to that town, the general opinion being that the germs were brought by some merchant vessel.

The constant communication between Brazil and Portugal, on one hand, and Brazil and Paraguay, on the other, should be sufficient to explain the importation of the bacillus Yersin-Kitasato, in the first place, to the town of Santos and later on to the city of Rio de Janeiro, in luggage, goods and cargo coming from the infected ports.

The case of Santos seems, effectively, to have been of Portuguese origin. The sailing ship, *Rei de Portugal*, left Oporto on the 31st of July, arriving at Santos a few days after the official declaration of the plague in that town, on the 1st ot August. It did not undergo quarantine nor disinfection. After the arrival of the *Rei de Portugal*, cases of suspected disease appeared in Santos, with tumours causing deaths, which were taken for yellow fever. At the same time a considerable mortality among rats was noted in the town.

From July to September 19 ships from Portugal, with 593 passengers, came into the port of Santos. Fresh suspected cases, of a strange character, were manifesting themselves until in October Dr. Lutz at first, Professor Chapot Prevost and Dr. Oswaldo Cruz later, recognizing the existence of the bacillus Yersin in the examinations of the patients, corroborated the cases.

In the city of Rio de Janeiro the first case passed without its origin being made clear, nevertheless it was certain that the appearance of the disease took place concurrently with the epizooty of rats in the Custom House warehouses, where the luggage of the 3rd class passengers from Oporto was stored. Other cases aroused similar suspicious with regard to the Portuguese origin of the plague. The Plague was not limited to those two towns; it spread to Nictheroy and Campos in the State of Rio de Janeiro; to Recife, in Pernambuco; to Porto Alegre and Rio Grande in Rio Grande do Sul; to Victoria, in Espirito Santo; to Corumbá in Matto Grosso; to S. Luiz, in Maranhão; to Belem in Pará; to S. Salvador in Bahia; to Pindamonhangaba and Guaratinguetá in S. Paulo; to Paranaguá in Paraná.

PROGRESS OF EPIDEMICS IN THE CITY OF RIO DE JANEIRO. The first epidemical epoch in 1900, caused 295 deaths out of 513 corroborated cases; the maximum of intensity was in the month of June, 78 deaths, gradually diminishing until March 1901 to one death. In 1901 the epidemic broke out in July reaching its hightest point in October with 61 deaths and disappearing in February 1902 with 2 deaths. In 1902 the epidemic began in August, 7 being the number of victims, and only abating in April 1903 in which month there were 3 deaths, continuing, without interruption, in May with 5 deaths and reaching in November to the number of 99 deaths. This epidemical aspect only ceased in May 1904. In this year the epidemic reached enormous proportions carrying off during the year 275 persons out of 672 recorded cases; the highest death rate being in October, 63 deaths, and the lowest in May 1905, one death. In 1905 the epidemical phase reappeared in June, 3 deaths, increasing until November, in which month there were 54 deaths, terminating completely in April 1906.

Table showing number of cases and deaths from plague in the city of Rio de Janeiro

1900-1911

YEARS	1900		1901		1902		1903		1904		1905		1906		1907		1908		1909		1910		1911		TOTAL	
Months	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
January..........	—	—	13	9	39	36	30	16	39	29	64	29	24	12	52	20	10	—	7	4	—	4	6	8	284	167
February..........	—	1	8	4	11	2	11	7	20	10	22	11	8	5	9	7	2	1	6	5	—	—	3	1	100	54
March	—	—	—	1	3	—	9	6	8	4	3	2	10	4	9	6	4	2	2	1	—	—	3	2	51	28
April..........	—	2	—	—	3	1	5	3	10	5	3	3	1	1	6	2	—	1	2	—	1	1	1	—	32	19
May	51	15	—	—	2	—	12	5	1	—	1	—	2	1	3	1	2	—	1	1	2	1	—	—	77	24
June	137	78	—	—	1	—	13	5	7	4	4	3	5	2	5	2	1	—	—	—	—	1	—	—	173	95
July..........	129	76	27	9	8	—	21	7	19	8	6	2	8	2	6	2	1	—	—	—	—	—	1	—	226	106
August..........	88	50	20	14	24	7	64	23	37	16	21	9	10	6	3	3	3	1	3	1	2	2	4	2	278	134
September	27	19	82	24	67	33	111	50	102	30	38	22	26	10	8	4	7	4	2	1	1	1	5	2	476	200
October..........	32	21	91	61	114	51	207	87	151	63	45	14	47	18	22	10	24	13	1	—	7	1	1	1	742	340
November..........	26	21	89	47	92	43	210	99	141	54	63	33	49	24	19	5	31	14	4	2	10	4	3	2	737	348
December..........	23	12	54	30	97	42	99	52	137	52	26	14	51	30	17	11	32	18	13	—	7	3	1	2	557	266
Total....	513	295	384	199	461	215	792	360	672	275	296	142	241	115	159	73	117	54	40	15	30	18	28	20	3.733	1.781

In May 1906 the first case of the new epidemical phase was confirmed, that caused 47 victims in November, ceasing in May 1907, 3 deaths. In this year there was a total of 73 deaths out of 159 cases, the greatest mortality taking place in October and December, 10 deaths in each month. In 1908 the death rate decreased to 54, the disease appearing in August, 1 death, and ceasing in March 1909, 1 death. In 1909 there were only 15 deaths; the epidemical phase already very low, lasted from August, 2 deaths, until February 1910, no death. In 1910 the disease began in August and the greatest mortality was in January 1911, 9 deaths, completely disappearing in April of the same year. In 1911 the first case of the epidemical period was in August ending in December of the same year.

By the mere inspection of these tables of mortality the progressive decline of the epidemics in the city of Rio de Janeiro may be verified as well as the duration of each epidemical period, the beginning of which generally occurs in spring and terminates in autumn, coinciding with the rise and fall of the temperature. A perfect dependence upon the meteorological condition well determined is therefore observed; the rise and fall of the temperature being very unfavourable for the development of the epidemics and murine epizooties.

Such demonstrations of the progressive diminution of the disease are exceedingly animating, fortifying the hope of the disappearance of the plague from the city of Rio de Janeiro in the near future.

The mortality from the plague, pursuant to the sex and age of the victims from 1900 to 1911 is shown in the table hereinafter transcribed.

Man by his profession and occupation is of a necessity more subject to plague than woman. Childhood and old age are spared more than youth and manhood.

Table of mortality from plague, according to sex and age in the city of Rio de Janeiro

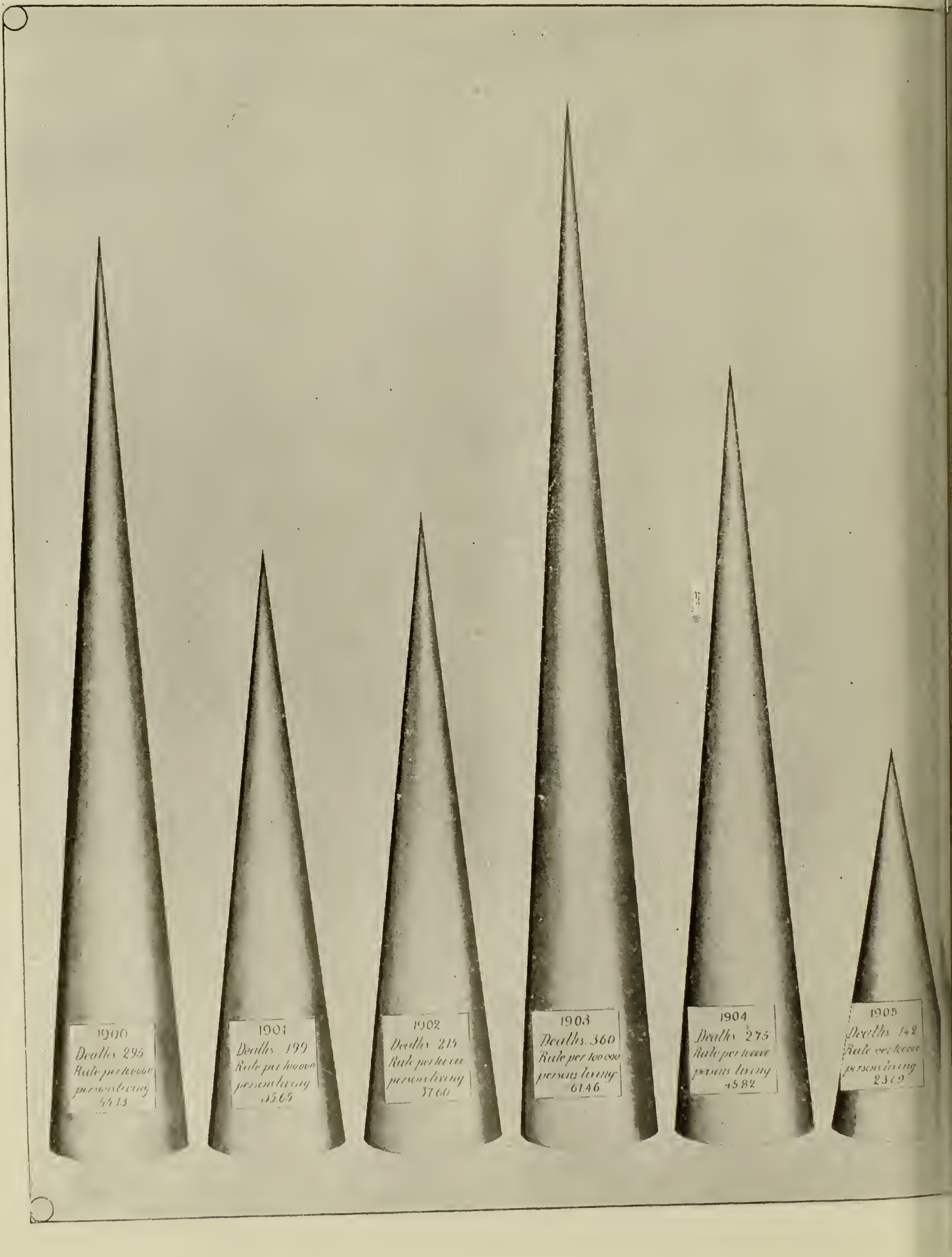
1903 – 1911

AGE	0 a 1 year		1 a 2 years		2 a 3 years		3 a 4 years		4 a 5 years		5 a 10 years		10 a 15 years		15 a 20 years		20 a 30 years		30 a 40 years		40 a 50 years		50 a 60 years		60 a 70 years		70 a 80 years		80 a 90 years		90 a 100 years		Above 100 years		Age unknown		TOTAL — Per sex		TOTAL
Years	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
1903	—	—	—	1	1	1	1	4	3	4	22	27	35	21	47	10	5'	22	32	10	15	17	7	3	8	5	1	—	—	3	1	—	—	—	—	—	223	137	360
1904	—	1	1	1	2	1	1	3	5	3	14	11	42	24	31	12	31	16	18	5	23	9	3	5	3	3	—	2	—	—	—	1	—	—	2	2	176	99	275
1905	1	—	—	1	—	—	—	2	1	2	10	7	12	16	13	2	23	10	13	8	8	3	3	1	1	1	—	—	1	1	1	—	—	—	1	—	88	54	142
1906	—	1	—	—	—	1	—	1	—	2	11	3	12	14	14	1	21	2	8	1	4	6	3	4	4	2	—	—	—	—	—	—	—	—	—	—	77	38	115
1907	—	—	—	1	—	—	1	2	—	—	4	2	16	7	1	3	5	4	4	—	4	5	2	—	—	—	—	—	—	—	—	—	—	—	1	—	49	24	73
1908	—	—	—	—	—	—	1	—	—	2	2	2	6	6	6	3	7	3	7	1	3	4	—	—	—	1	—	—	—	—	—	—	—	—	—	—	32	22	54
1909	—	—	—	—	—	—	—	—	—	—	1	—	1	2	2	—	2	3	1	—	2	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	9	6	15
1910	—	—	1	—	—	.	—	—	—	1	—	—	3	1	4	—	2	—	3	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	14	14	18
1911	—	—	—	—	—	—	—	—	—	—	—	1	1	3	3	1	6	—	1	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	8	20
	1	2	2	4	3	3	4	12	9	14	64	53	128	94	132	32	147	60	87	35	60	46	19	15	16	12	1	2	1	4	2	1	—	—	4	3	680	392	1072
Total	3		6		6		16		23		117		222		164		207		122		106		34		28		3		5		3		—		7		1072		

ANNUAL MORTALITY FROM PLAGUE IN

1900

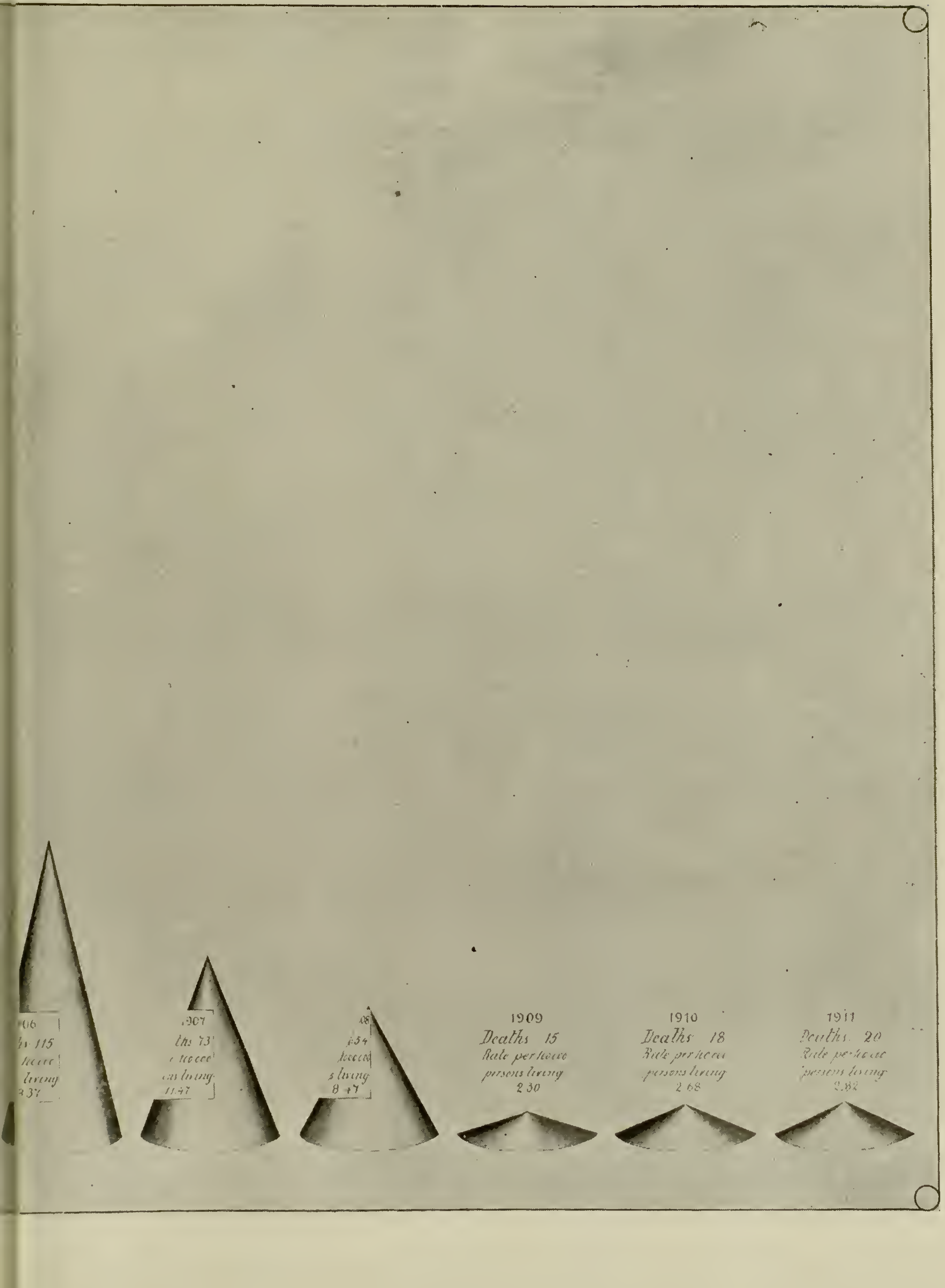
Death-rates per 10



RO DE JANEIRO (URBAN DISTRICTS)

-911

00 persons living



PROPHYLAXIS OF THE PLAGUE IN RIO DE JANEIRO

The etiology of the plague and its contagious character is well known; this being proved by positive and indisputable facts of transmission and importation and by the preserving influence of isolation.

The specifc germs that determine the disease, the bacillus of Yersin and Kitasato, are found in the diseased man, in the pestiferous rats and infected soil. In man the specific bacillus can exist in the moisture or in the purulent matter of the tumours, in the pulp of the lymphatic ganglions, in the periganglinous seriosity, in the produce of expectoration, in the salive, in the urine, in primary cutaneous wounds, in the blood and, sometimes, in the sediments.

Rats play the most preponderant part in the propagation of the plague which develops among them in a great degree, causing devastating epizooties. These animals, extremely susceptible to the plague virus, infect the fleas that breed in them and contaminate the soil. Objects and food can egually be tainted by the nasal mucus of these rodants.

The propagation of the plague by the rats is an indisputable fact, observed by scientists of repute in all countries of the world where the disease has spread epidemically.

When the first cases of plague occurred in Rio de Janeiro, the mortality of rats was extraordinary. The same precedence of epizooties was observed every time, an epidemical period began and before the appearance of each isolated case.

In proof of this assertion, innumerous real and positive facts can be invoked, nevertheless we restrict ourselves to just note, succintly, some of the most important sufficiently proving the influence of the mortality of rats upon the progress of plague epidemics.

In April, 1903, the plague had considerable diminished in the city of Rio de Janeiro, only 5 notifications of suspected cases having reached the sanitary authorities.

In May, however, a considerable mortality of rats appeared continualy in the district of Lagoa, in several private houses, collective habitations and public establishments such as the Military School, National Lunatic Asylum and the Institute for the Blind.

Various cases of human plague broke out after the appearance of the epizooties. A dangerous and violent centre developed which claimed the greatest attention of the authorities in charge of the public health.

All persons attacked were promptly removed to the hospital of isolation and thorough disinfection was instituted, throughout the whole district strong disinfectant solutions and phenol projections with the apparatus of Geneste & Herscher being employed. Some houses were closed and interdict and the greatest medical vigilance was exercised on all persons in direct contact with the patients.

The disinfections were repeated, for some time, with the greatest rigour everything being done in accordance with the rules and regulations in force.

The epizooty ceased and no other case of human plague occurred.

In 1905 the notifications of the plague had decreased considerably, when, suddenly, in one of the districts of the city constituting an old and well known perilous centre, violent mortality of rats began in houses wanting in the most rudimentary measures of hygiene and which had not passed through a rigorous sanitary inspection, in virtue of their being situated in region on a high hill which was to be demolished for a complete hygiene transportation.

Soon after the cases of human plague broke out in the houses referred to.

The centres irradiated vehemently but were subdued promptly, thanks to the great energy, dedication and tenacity of the systematic labour of the most rigourous disinfection.

In the same epoch, in another part of the town a great epizooty appeared in some old barracks, which being, at first, abandoned unknown to the authorities of public health, gave occasion to the manifestation of nine cases of plague, in five days, among the soldiers quartered therein.

The conditions of cleanliness were execrable and everywhere dead rats in profusion were found, under the flooring, in the wainscotting, walls and beadsteads. A number of pestiferous rats, according to the bacteriological examination, wandered about all over the barracks and grounds completely giddy.

Besides this, on the same occasion, in a large iron-factory, in bad conditions of cleanliness and hygiene, where 300 workmen were employed, a great mortality of rats took place, which was only communicated to the sanitary authorities after one of the workmen was attacked

In all these places the disease ceased completely, not only in the original centres but also in their neighbourhood, this being a patent and indispensable demonstration of the value of disinfection in the plague.

The essential role of the mortality of rats in the manifestation and extension of the epidemic plague and the extreme rarity of inter-human contact seem very evident by these and other facts which occurred in Rio de Janeiro.

The investigations of English Commission in India, on this subject, are very important. The principal conclusions set forth there in upon the propagation of the plague we judge opportune to transcribe:

1°. A great number of human epidemics of plague consist almost exclusively of cases of bubonic plague and are directly connected with an epizooty which attacks rats. The development of epizooty precedes the human epidemic about 15 days.

There is no fact indicating that other animals, besides rats, play an important part in the epidemics of plague.

2°. Epidemic plague of rats:

(*a*) Fleas after having sucked the blood of a rat attacked with plague can transmit the disease to rats in good health. The bacilli of plague multiply in the stomach of the flea and the flea can still transmit plague, 3 weeks after having sucked the infected blood.

(*b*) If infected rats are placed with healthy ones the propagation of the epizooty cannot be produced there being no fleas. Should fleas exist, the disease is transmitted by the infected rats to the animals in good health; the rapidity and the gravity of the epidemic are in direct relation to the abundance of fleas.

(*c*) Rats may be infected, by devouring dead infected rats. The distribution of the lesions over the bodies of rats infected naturally is similar to that of rats infected experimentally with fleas and not to that of rats infected through devouring dead bodies.

The Commission states, in conclusion, that plague is essentially propagated among rats by fleas.

3°. Epidemic plague among mankind.

(*a*) Bubonic plague is not directly transmitted from man to man as proven in hospitals of patients of plague where the disease does not attack the nurses.

(*b*) Epidemics of plague in man are always associated with murine epizooties. Epidemic plague in rats gives rise to a great production of fleas of infected rats, and, due to the mortality among rats, these fleas are transmitted to the human body.

(*c*) The flea of the rat (Pulex Cheopis) bites man specially in the absence of his customary guest.

(*d*) Rat fleas containing bacilli of plague and known as being susceptible of transmitting the disease may be found in houses infected by plague.

(*e*) Plague receptive animals (Guinea pigs, monkeys) placed in houses infected by plague, if not protected against fleas, contract the disease; while the same animals, in like circumstances, do not catch this disease if protected from fleas.

(*f*) The commission made numerous experiments for the purpose of trying other probable means of infection and verified that, in the majority of cases, during an epidemic of plague, men are infected by infected fleas which transmit to them the disease from infected rats.

In the city of Rio de Janeiro the preference of the pestilent bacillus for old houses, where generally crowding, poverty and filth prevail thus developing rats and their parasites, is manifest.

The prophylaxis of the plague in Rio de Janeiro is made as follows: —

1st.—Isolation of the patients; 2nd.—Disinfection of the dwellings, persons, clothing, and objects that were contamined; 3rd.—Isolation of the patients infected with pneumonic and septicemic plague and suspected cases of the bubonic plague; 4th.—Disinfection of the contagious areas, infected habitations and adjacent buildings; 5th.—The slaughter of rats; 6th.—Medical vigilance;—7th. Anti-plague vaccination.

ISOLATION OF THE PATIENTS

The sanitary law of March 8th 1904 prescribes the following: «Art. 153. — The isolation is divided into that relating to hospitals and domiciles, the latter being subdivided into complete and partial isolation.»

In the cases of plague in Rio de Janeiro the hospital isolation has been the rule. All patients are removed to the hospital, where complete arrangements for their necessary treatment are found. People became so accustomed to this regimen that the hospital isolation caused no repugnance.

From the moment the case is clinically considered as plague, even before the bacteriological examination, the patient is removed to the hospital. When necessary, the sanitary authorities inject in the patient a dose of anti-plague serum before the removal.

The domicile isolation is not put into practice, among us, for the cases of plague, as all patients prefer to be treated in the hospital; nevertheless deaths occur in the dwellings, when the disease is recognized too late by the medical assistant, or when the patients die without medical assistance.

DISINFECTION OF THE DWELLING, PERSONS, CLOTHING, AND ALL OBJECTS AND UTENSILS

Disinfection of the dwelling is made immediatly after the removal of the patient or, in the case of death, after the removal of the body. The greatest care and rigour prevailed in this service; ceilings, floors, walls, windows, doors, furniture, recipients and objects left in the room, are washed with disinfectant solution, nothing being over looked so that no germs can escape destruction by the disinfectant agents. This service being directed by a sanitary inspector acting in accordance with special instructions.

With the object of destroying the generating germs of the disease and the fleas transmitting them, the disinfections are effected with solutions of phenol and cresol at a high temperature, generally employing, for this purpose, the *Geneste & Herscher* pulverising steam apparatus, that acts simultaneously by the disinfectant power of the agent employed, by the elevation of the temperature to 100° and by the violence of the ejection, projecting in all parts, a strong and abundant discharge composed of steam and solution of carbolic acid.

In these dwellings, the rats frequently hide in the wainscots and between these and the boards dying there in numbers. The disinfection, however, is always made before taking up the floors. At times heaps of dead rats are found, not only under the flooring but also in the wainscots and even in the walls of the dwellings. This measure has produced real and important benefits, and has been systematically employed since 1904, not only in the houses infected by the human plague or epizooty, but also in the whole block of buildings.

In addition to the disinfection of the dwellings, the purification of bed-clothes, clothing, objects and utensils belonging to the house, is strickly done; the effects to be transported, and those not capable of supporting the action of heat being duly separated before carrying out the disinfection.

ISOLATION OF COMMUNICANTS

The penetration of the bacillus Yersin is made through the skin and by the mucus, through the respiratory organs or by the digestive tube. During the normal and dyspnœa respiratory action of the patients attacked with pestiferous pneumonia, the plague bacillus is not exhaled by the breath expelled, but, during the coughing or expectoration, numerous bacillus are disseminated in the atmosphere. The contagion can easily be given to the doctors, nurses or persons attending upon the patients.

It is due to this that the persons infected by the pneumonia forms of the plague are isolated and subjected to a rigorous medical vigilance.

The bubonic plague, not being precisely contagious, only individuals already with suspected symptoms of the disease require this strict treatment.

DISINFEGTION OF THE CONTAGIOUS AREAS

Whenever a case of human plague or epizooty is recorded, the service of disinfection is made not only in the infected house, but also systematically in the block of houses in which the principal centre of disease is situated. To stop the rats escaping and infecting other places, the disinfection begins simultaneously at the four corners of the block converging towards the central parts, in order to force the rats to emerge through the centre, where they are entrapped and killed.

This process has produced the best results, a new case of plague never having been observed after the period of incubation of the disease in any of the houses contained in the block.

SLAUGHTER OF RATS

The systematic slaughter of rats and their parasites, the true spreaders of the disease by land and sea, has greatly contributed to the extermination of the plague in the city of Rio de Janeiro. A stubborn and active campaign was kpet up against these animals, although the impossibility of completely destroying them was acknowledged. With this object a gang of ratcatchers was engaged in 1904. The rats being brought to the proper department and the men paid at the rate of 200 reis per dead rat.

Despite the slaughter having been comparatively small considering the prodigious prolificacy of these animals, this diminution has the effect of reducing the probalities of human infection.

Besides this slaughter effected by pursuit and purchase of the animals, they are also exterminated during the disinfection of the contaminated dwellings either by traps expressly set for them or by disinfecting substances, and also by poisonous chemicals.

The rat catching is chiefly made in the suspected or infected districts and old centres of infection, always under the direction of the sanitary authorities. Every week the bacteriological examination of the ensuared rats takes place. It is necessary to make known the important services of the sanitary police in this campaign against rats; also the provision of the sanitary authorities re the absolute impermeableness of the ground of the dwellings, it being obligatory to cement the pavements of new buildings and of those in repairs.

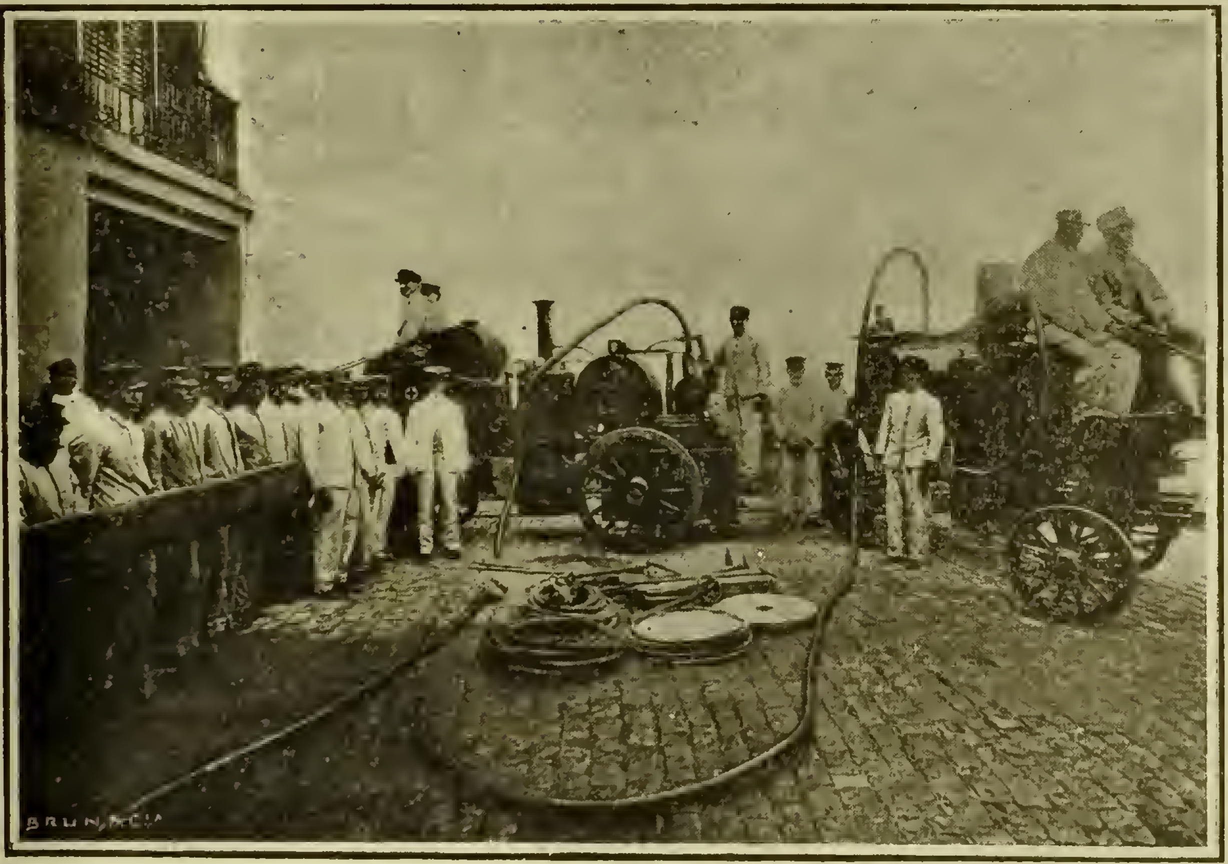
Total of houses made impermeable against rats

1904 - 1911

SANITARY DISTRICTS	Year								TOTAL
	1904	1905	1906	1907	1908	1909	1910	1911	
1st	67	241	367	483	423	450	297	456	2784
2nd	201	285	310	338	294	372	447	446	2693
3rd	141	106	208	151	211	142	105	160	1224
4th	291	810	537	897	633	285	174	199	3826
5th.	—	511	589	680	629	586	25	258	3278
6th.	584	850	980	679	413	258	211	333	4308
7th.	494	665	764	982	516	370	239	316	4346
8th.	—	316	319	217	180	522	538	694	2786
9th.	221	620	268	528	717	889	213	453	3909
Total . .	1.999	4.404	4.342	4.955	4.016	3.874	2.249	3.315	29.154

The city of Rio de Janeiro has undergone a real transformation in this respect; blocks of old and filthy houses have been pulled down to give place to avenues and wide streets, where new buildings with all the latest improvements of hygiene are being constructed.

Another process employed in this useful campaign is the destruction of rats existing in the rain-water drains and sewers, disinfecting them by the combustion of sulphur, using the Clayton apparatus which destroys the mosquitoes at the same time, thus performing a service to the prophylaxis of yellow fever and malaria.



Clayton's apparatus.

By the following table it will be seen that up to the present date 3.192.463 rats have been incinerated, besides those killed by disinfection and the dead ones taken out of wainscots, floors and walls.

Total of rats incinerated in the city of Rio de Janeiro

1903 - 1911

	Year								
	1903	1904	1905	1906	1907	1908	1909	1910	1911
January . .	—	11.040	25.663	44.433	41.079	37.904	38.379	29.383	31.371
February .	—	10.473	21.722	53.619	32.468	38.041	31.950	27.796	28.276
March. . .	—	13.285	23.626	23.741	35.655	35.735	38.682	29.645	29.581
April . . .	—	11.940	27.642	23.955	39.752	38.207	37.503	30.861	27.144
May. . . .	—	16.211	44.713	24.169	42.344	40.129	38.020	34.127	29.481
June. . . .	—	20.248	23.773	35.890	40.357	34.354	34.449	24.771	28.481
July. . . .	—	68.813	29.078	38.190	41.617	39.667	32.887	39.363	29.311
August . .	—	34.645	32.281	38.894	41.660	42.318	28.466	27.350	28.456
September.	1.454	31.382	36.349	40.568	38.954	41.488	32.077	31.610	32.054
October. .	7.546	31.422	36.193	41.426	41.425	43.772	36.848	36.875	30.805
November.	6.104	23.718	36.740	37.083	40.425	40.474	33.171	34.096	18.550
December .	9.337	22.736	32.232	28.629	35.869	39.810	32.883	34.118	19.176
Total . .	**24.441**	**295.913**	**370.012**	**430.597**	**471.605**	**471.899**	**415.315**	**379.995**	**322.686**

The disinfections with phenol solutions, at a high temperature are of a positive and real value in fighting epizooties, as they destroy rats and their parasites.

As an illustration of the above, we quote the following fact: —

«In 1906 on a large plot of land in the Praia do Flamengo, surrounded by first class residences there was a big shed in a filthy state where provisions of all kinds were kept. This shed through judicial motives, was locked and interdict and said provisions in a short time were reduced to a state of complete putrefaction. A loathsome stench emanating from the putrefaction of the provisions and from the enormous quantity of dead rats, issued from the centre of the shed.

One of the neighbouring residents, frightened by such an event, reported it to the sanitary authorities, demanding urgent and energetic measures. Overcoming satisfactorily the difficulties and pressing necessity, the shed was handed to the General Board of Public Health and it was at once opened for the necessary cleaning and disinfection; 114 large dead rats in an advanced state of putrefaction were taken out. Those still fit for examination underwent the bacteriological, it being verified that it was plague which was confirmed by the immediate appearence of a serious case in the person of a servant in a house hard by.

Repeated disinfections were made with the maximum rigour during some days in the shed and grounds, and adjacent dwellings, including a Home for Destitute Children, who were, as a preventive measure, immuned by the anti-plague serum. As a matter of fact, excepting the case of plague occurring simultaneously with the appearance of the mortality of rats no other case broke out in the district adjoining the one infected.

Other cases similar to those narrated corroborate the indisputable value of the disinfection and destruction of rats in the prophylaxis of plague.

MEDICAL VIGILANCE

Directly the existence of a case of plague in a house becomes known, the sanitary authorities draw up a list of all persons residing in the house and center, the family or the person in charge of the house being held responsible for the list and subject to fines or imprisonment should the name of any resident be withheld or omitted.

The medical vigilance takes place in the whole of the district deemed to be the. centre of disease during 5 days in the following manner:

(*a*) In the same house where the case appeared, the thermometrical observation of all persons under vigilance shall be made daily, the results to be set forth in the bulletin of service.

(*b*) All persons residing in the adjacent houses shall be inspected, the thermometer being applied only on those who appear to be ill.

(*c*) An individual being found feverish, the sanitary authority shall demand the presence of the family doctor, who shall make a careful examination of the patient and shall give his opinion, when however, the patients have no medical adviser or when there be a written consent of the family, then the sanitary inspector may make this examination.

Before confirming the diagnosis, the patient is isolated in the building, the owner being held responsible and liable to heavy fines or imprisionment should the patient not be found.

The persons under medical vigilance shall be able to change residence provided they furnish the sanitary authorities with precise information regarding their new abode. As an assistance to the medical vigilance it is incumbent upon the Board of Health to inspect the file of prescriptions at the chemists in order to facilitate the discovery of infectious diseases.

VACCINATION AGAINST PLAGUE

The application of the vaccination serum is one of the safest remedies against the propagation of the plague. All persons residing in the plague centres or having contact with the patients being subjected to it.

The preventive inoculation against the plague is such an important and valuable measure that it is necessary to insist upon it. It is not only a means of personal protection of great importance; it also serves in diminishing the epidemic in all its concurrent states.

The results obtained by the serum and vaccine prepared at the Institute Oswaldo Cruz in Manguinhos have been highly advantageous. During the epidemical epochs an injection of anti-plague serum, which prevents the disease during 15 days, is made in the persons exposed to contagion.

As however its preventive action is transitory it is necessary to employ at once the vaccine, the immunity of which lasts a long time.

The immunity of the vaccine is only established 10 to 12 days afterwards and therefore among us during epidemical epoches we use serum-vaccination.

The Brazilian anti-plague serum gave excellent results in the experiments made at the Koch Institute in Berlin; the animals immuned with anti-plague serum prepared in Rio de Janeiro and afterwards inoculated with plague microbes suffered nothing at all, whereas all those inoculated with bacillus of the plague, and which had not been vaccinate with serum, died.

In many countries the Health Authorities have not insisted upon the anti-plague vaccination, due to the uncertainty of the duration of the immunity period and to fear of the manifestation of any disease in the individual innoculated being attributed to said vaccination—as such a fact might discredit the Officials of the Public Health Department, the more so as the measures adopted at present to limit or cause the epidemic to cease are sufficiently efficacious.

The anti-plage innoculation is not obligatory among us; it is employed only on such persons as are willing to use it. It is a means of prophylaxis of an absolute personal character the use of which is recommended to people, it being not compulsory nor obligatory.

In spite of the difficulty of exterminating the plague, as its principal prophylaxis depends upon the complete destruction of rats and their parasites, this disease is gradually disappearing in the City of Rio de Janeiro, thanks to the pertinatious measures systematically applied by the sanitary authorities.

The isolation of patients and communicants, the disinfection of the zones, dwellings and objects infected and the slaughter of rats are, in fact, means of prophylaxis of the greatest value, but they are not sufficient to destroy in an absolute manner all germs of the disease without the powerful assistance of a severe sanitary policy.

The constant sanitary inspection of dwellings, waste grounds and public spaces, securely carried out with the object of avoiding the manifestation or propagation of infectious diseases ; the revision of old centres ; the cementing of ground floors of infected houses and adjacent buildings have strongly contributed for the improvement of the sanitary conditions of the city of Rio de Janeiro where the average mortality has fallen considerably, due to the mortality from infectious diseases having diminished in a striking manner.

III

CHOLERA AND CHOLERIFORM DISEASES

The development of the epidemic of cholera is too well known to require any comments on the different phases of its terrible manifestations.

Since 1817 until our days, cholera, the origin of which was in the East Indies, has developed as an epidemic with more or less intensity, overrunning all parts of the world.

In Europe its principal incursions took place in 1830, 1846, 1865, 1884, 1892 and 1905.

In the epidemics of 1830 and 1846 the disease did not cross the equator.

Brazil was spared until 1855.

In the end of 1854 were felt the first apprehensions of the appearance of the disease, due to the constant arrivals in the Brazilian territory of ships coming from London, Cardiff, Liverpool, Hamburg and other points infected by cholera.

On the 15th of May 1855, the Portuguese galley *Defensora* called at the port of the capital of the then province of Pará on her trip from Porto with 322 persons, on board of which ship several cases of cholera occurred, causing 36 victims. Ten days after the said galley had entered the port of Belem the first case of the disease made its appearance in the person of a soldier in the army. This case was followed by others, and within a brief period of time the epidemic assumed an open and alarming character. The number of deaths reached 4828.

From Pará it passed into Amazonas and Maranhão, taking an intense and deadly character.

It got into Bahia in March of the same year, brought by a cargo boat coming from S. John and by a bark coming from Pará. The epidemic developed with great intensity in the capital and inland, causing 30.000 victims. From Bahia it spread over Alagoas, Sergipe, Rio Grande do Norte, Parahyba and Pernambuco.

Cholera was brought to the City of Rio de Janeiro by the steamer *S. Salvador* arriving on the 11th July from Pará, having touched the North ports of Brazil on the voyage. The first case, which occurred on the 15th July, was that of a negro who had come by that steamer. After this, many cases were recorded until, in August, the disease took the form of an epidemic, increasing considerably in November when the number of deaths exceded 2.300.

In spite of the severe sanitary measures the epidemic continued with violence, causing a considerable number of victims, decreasing however from December of the said year to May 1856, when it completely disappeared.

In 1861 the epidemic reappeared in Pernambuco and invaded Ceará, causing there 12.735 victims.

The second invasion of cholera in the City of Rio de Janeiro occurrred in 1867, coming, it is said, from Rio Grande do Sul, where it entered by means of a ship coming from North America.

The epidemic of 1867 was small; it lasted until May of the same year, causing 423 deaths.

On the 4th of January 1868, cholera again made its appearance in the City of Rio de Janeiro with the arrival of the transport *Marcilio Dias*, on board of which several fatal cases occurred during its voyage from Paraguay to Brazil — a fact which, in order to avoid quarantine was not disclosed.

The day on which the passengers landed, the first case of the disease was declared, followed by many others.

From February to April it augmented proportionately, ending completely in May. The total mortality of the epidemic period was 234 deaths.

A long period passed without Brazil being afflicted with this epidemic, when, in 1893, cholera appeared again in São Paulo, imported from Italy in luggage belonging to immigrants coming from the steamers *Ré Umberto*, *Colombo* and *Cintra,* causing little harm in consequence of the application of intelligent and energic sanitary measures.

About the end of November 1894, however, various doubtful cases of the disease occurred in different points of the Parahyba valley, in Rio de Janeiro, the first victims of this disease being the employées of the Central of Brazil Railway.

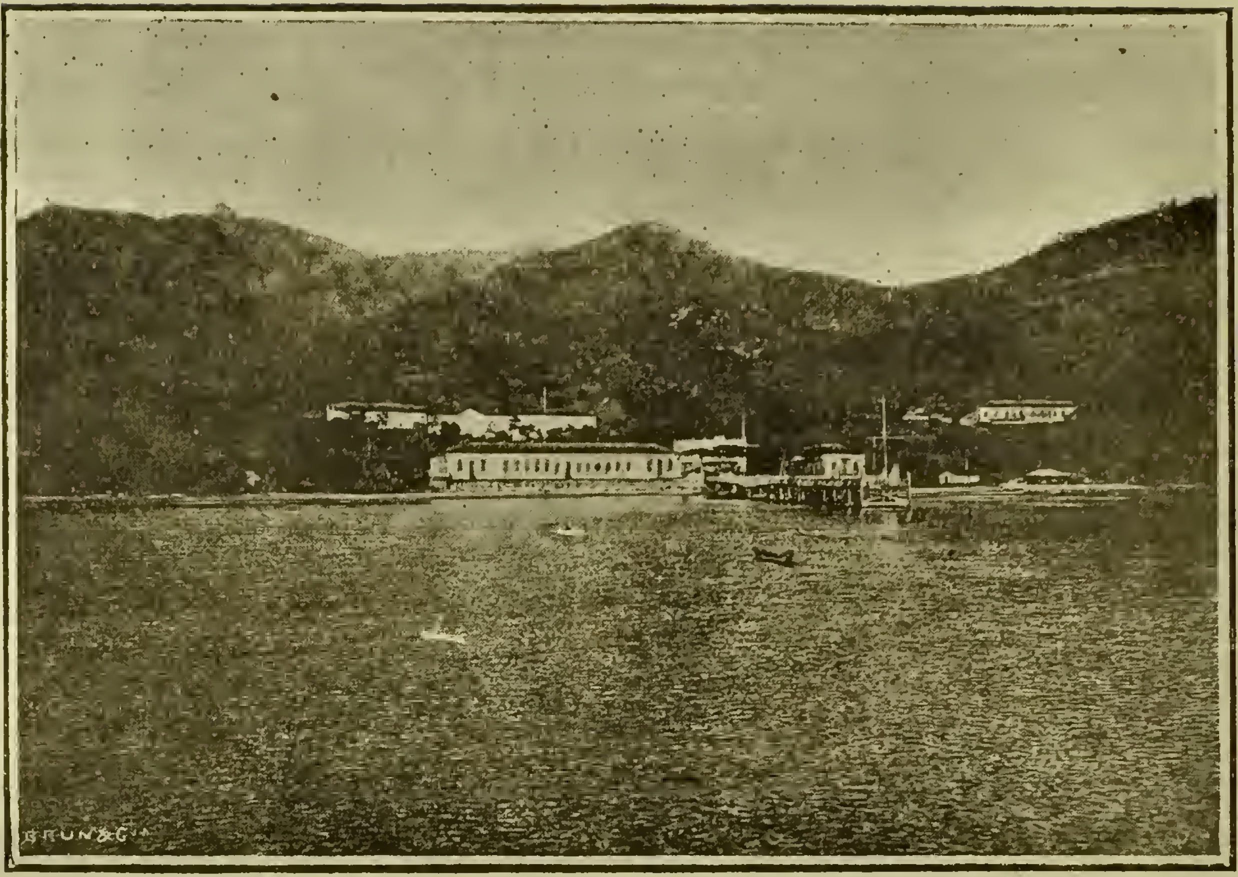
After its having made victims in different localities of the interior of Rio de Janeiro, São Paulo, Minas and Espirito Santo, the disease invaded the city of Rio de Janeiro, the first case appearing on the 29th November in a person who had come from the State of São Paulo and who had crossed the zone supposed to be infected.

New cases began to be recorded and an epidemic developed from December 1894 to July 1895, 635 patients being notified.

The epidemic disappeared completely in 1895, and until the present date no other invasion of the terrible scourge has occurred in the City of Rio de Janeiro.

In 1910 the English steamer *Araguaya*, that left Soutampton on the 30th September, arrived at Pernambuco in the beginning of October, having called at Cherbourg. Some deaths occurred during the voyage amongst the 3rd class passengers. Two of these passengers landed in Pernambuco and took the steamer Manaus bound for Pará, dying during the voyage. The steamear *Araguaya* was taken to the lazaret at Ilha Grande, with passengers and cargo, being submitted there to strict disinfection. The *Araguaya* left on the 29th October for Montevideo, whence it started on the 10th November 1910 for Southampton.

The measures taken by the General Board of Public Health were so thorough, energetic and efficient, that no other case of cholera occurred amongst the passengers who landed ind Rio de Janeiro nor was the disease transmitted to the inhabitants of the city.



Lazaretto of Ilha Grande.

PROGRESS OF THE DISEASE

In 1895 the sanitary authorities received 628 notifications vith the following diagnosis:

Cholera morbus	70
Choleriform diarrhaea	464
Choleriform enteritis	31
Cholerin	21
Choleriform gastro-enteritis	1
Malignant choleriform seizures	3
Diarrhaea of doubtful character	28
Suspected cases of cholera	10
	628

The 628 cases in the year 1895 occurred in the following months, to wit.

January	71
February	155
March	161
April	158
May	64
June	17
July	2
	628
December 1894	7
	635

Of these 635 patients 459 were removed to the isolation hospital, and 176 remained in their dwellings.

156 patients died in their house and 317 in the isolation hospital.

PROPHYLAXIS OF CHOLERA IN THE CITY OF RIO DE JANEIRO.

On the discovery by Koch, in 1883, of the *comma bacillus* or *vibrion bacillus* the prophylaxis of cholera took a new direction, in order to prevent its rapid spread from city to city, from locality to locality, from house to house, or from person to person, by means of merchandise, luggage, clothing, drinking water, comestibles, or individuals, whether sick or in health.

This infectious, acute and epidemical disease, attacks the intestines, and is expelled from the human body in the dejections and rarely in the vomit, man being the principal agent in its distribution.

The principal danger, then, lurks in the stools of the patient. From these the cholera vibrion is carried by flies, which contaminate food, and cooking and eating utensils. It enters the alimentary canal by means of drinking water, raw food, or even by the hands clothing, or articles utensils defiled by virulent feculent matter.

The chief source of transmission is drinking water, caused by the contamination of reservoirs and streams by the products of the evacuations of persons suffering from cholera.

The provisions of the Brazilian sanitary law in respect to cholera include:

a)—compulsory notification;

b)—isolation of the patient and of those who come into contact with him;

c)—disinfection of houses, goods and clothing, and of contaminated articles and utensils;

d)—sanitary inspection.

These measures, together with strict oversight of food-stuffs and of drinking water, were exercised with the greatest rigour during the epidemic of 1894-1895. The results were surprising.

The disease was stamped out at its various centres and if in the same house, more than one case appeared, the measures of isolation and disinfection stopped it completely, the houses in the neighbourhood remaining untouched.

Among the disease centres which were formed at that time, two presented all the conditions favourable to its spread; notwithstanding, it was limited to, and stamped out at its original point.

In the beginning of March at the National Asylum for the insane, the scourge appeared, with all its accompanying symptoms, in a lunatic who died, and, soon after, new cases appeared daily in the women's wards, most of which cases being fatal.

The hygienic measures intended for defence against this disease were forthwith instituted. The patients were installed in an isolation pavilion. The building was completely disinfected as well as bed clothes and wearing apparel, objects and utensils of all sorts. During 25 consecutive days the work was continous, room by room, cubicle by cublice, wards, refectories, kitchen, water-closets and urinals, the ceilings, floors, walls, doors, windows, furniture etc. being likewise thoroughly disinfected.

These measures produced immediate results and the epidemic was soon suffocated. In 20 days, 54 patients were sent to the infirmaries of whom 44 died.

A short time afterwards in one of the barracks of army a soldier was attacked by the most serious symptoms of the epidemical disease consisting of watery vomits, intestinal flux, cyanotic colour of the tegument, special external symptoms, weakness of voice, generalised cramp, pronounced cold, circulatory disturbances, and hematosis. Later on, another patient showed the same symptoms and new cases continued to appear. The patients were removed to the isolation hospital.

The disinfections were made with the greatest energy in all the dependencies of the barracks. The matresses, pillows, and bed-clothes were burnt and substituted by new ones, as well as all the wearing-apparel used by the soldiers. The food was rigorously examined, the greatest attention being given to the potable water, which was distributed only after it had been boiled.

The greatest sanitary supervision was exercised in order that the strictest isolation might be maintained in the center of the infectious disease.

During 8 consecutive days, the measures of isolation and disinfection were carried out with the greatest pertinacity and efficacy and thus the epidemic disappeared, it being possible to transfer the battalion to another barracks, where no new case appeared.

IV

VARIOLA --- Small-Pox

This terrible disease which, for many centuries, has been one of the greatest calamities of mankind, was brought into Brazil by its first colonists. It first broke out in 1563 assuming terrible proportions, attacking the natives and victimizing 30 thousand inhabitants of the Province of Bahia. In Maranhão the disease developped itself in 1621; in Pernambuco, in 1642; in Parahyba do Norte, in 1663; and it ravaged the provinces of Pernambuco, Bahia, Espirito Santo and Rio de Janeiro, in 1666, causing enormous losses.

In the city of Rio de Janeiro, after 1666, small-pox made many further incursions. Starting from 1804, the epidemics of this disease became more attenuated in consequence of the practice of vaccination introduced in that year.

After a disappearance of 5 years the disease broke out again in 1834 and assumed an epidemic character causing innumerable losses. In 1836 the disease reappeared in an intense and deadly form, causing the greatest mortality recorded during a period of 40 years up to the year 1865, in which the epidemic was not inferior in extension scale, and gravity to the former.

In 1844, 1848, 1850, 1858, 1862, 1873, 1878, 1883, 1891, 1895, 1899, 1904 and 1908 epidemics broke out on a greater or smaller scale which were real public calamities.

The course of these epidemics in Rio de Janeiro is curious; its period seems to be determined by intervals of 4 to 5 years.

From 1834 to 1911, the most recent and desolating epidemics were the following: in 1834, 1865, 1878, 1881, 1904 and 1908. The last was the most extensive and violent of all that have been hnown to occur in the city of Rio de Janeiro. The coefficient of mortality was 10,9 deaths per 1 000 inhabitants.

The disease caused the greatest number of victims among new born children till the age of one year, decreasing gradually up to the age of 20, increasing a little form 20 to 30 and diminishing again gradually form the latter age onwards.

Mortality from small-pox in Rio de Janeiro

1859-1911

Urban districts

YEARS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTAL
1859	13	3	2	1	2	9	22	17	19	19	14	19	140
1860	20	15	6	7	6	7	9	3	10	10	19	21	133
1861	11	1	6	3	1	7	7	17	25	41	35	24	178
1862	29	14	5	9	13	17	26	5	63	37	30	35	283
1863	—	—	—	—	—	—	—	—	—	—	—	—	—
1864	—	—	—	—	—	—	—	—	—	—	—	—	—
1865	—	—	—	—	—	—	—	—	—	—	—	—	—
1866	—	—	—	—	—	—	—	—	—	—	—	—	—
1867	—	—	—	—	—	—	—	—	—	—	—	—	—
1868	13	8	10	8	14	10	7	5	9	11	3	4	102
1869	10	6	2	3	4	1	—	1	1	1	1	4	34
1870	4	5	2	3	4	10	18	51	68	79	51	43	338
1871	34	19	17	5	2	2	—	—	5	9	7	20	120
1872	23	18	13	10	10	20	37	85	35	181	245	244	921
1873	185	104	86	51	60	72	107	139	246	255	200	124	1.629
1874	49	26	39	22	47	68	79	8	75	67	57	39	576
1875	34	24	15	9	9	9	14	39	72	63	37	38	363
1876	20	18	8	5	10	5	16	23	22	20	9	13	169
1877	11	9	5	1	3	1	4	9	12	17	13	18	103
1878	24	21	19	27	58	92	156	330	610	453	240	145	2.175
1879	73	28	7	4	4	12	6	8	18	16	11	10	197
1880	2	—	—	1	—	—	1	6	1	4	2	10	27
1881	13	4	2	4	1	2	4	6	11	18	25	37	127
1882	30	23	15	11	16	34	30	75	164	195	190	154	937
1883	95	74	49	48	65	118	190	239	238	132	82	36	1.366
1884	40	16	13	6	2	2	1	2	3	2	—	3	90
1885	—	—	—	—	—	—	—	—	1	—	—	3	4
1886	1	—	4	1	—	1	2	8	10	27	48	62	164
1887	74	74	91	129	202	291	443	699	635	426	219	74	3.357
1888	41	32	5	7	5	8	7	11	11	21	12	11	171
1889	8	10	6	9	11	17	20	63	143	120	87	115	609
1890	86	39	13	15	14	16	19	25	36	34	32	32	361
1891	48	37	37	44	73	199	309	786	1.000	738	398	275	3.944
1892	162	54	45	25	20	20	13	1	13	11	3	2	369
1893	3	—	1	—	—	4	—	15	7	4	12	8	54
1894	5	5	2	2	—	3	10	8	20	8	11	12	86
1895	16	26	19	28	21	73	183	331	385	404	223	156	1.865
1896	135	63	31	16	11	18	16	22	35	37	25	13	422
1897	11	10	—	3	1	—	—	—	1	3	5	2	36
1898	3	—	—	—	—	—	—	—	7	13	21	21	65
1899	23	10	23	30	42	73	114	168	270	254	234	154	1.395
1900	97	63	62	22	12	22	23	33	57	68	83	48	590
1901	54	12	22	10	38	52	129	256	229	217	219	176	1.414
1902	83	36	25	21	19	28	40	69	75	90	52	42	580
1903	16	26	26	6	14	26	35	97	114	152	131	162	805
1904	107	114	153	137	195	327	457	608	583	412	280	193	3.566
1905	74	39	24	13	17	16	6	19	11	14	12	11	256
1906	3	4	1	—	—	—	—	—	—	—	—	1	9
1907	1	1	3	4	3	3	6	7	17	22	24	34	125
1908	62	68	143	225	306	575	1.011	1.278	1.202	889	499	287	6.545
1909	111	57	45	21	13	14	10	3	—	—	—	—	274
1910	—	1	—	—	—	—	—	—	—	—	—	—	1
1911	1	1	—	—	2	—	—	—	—	1	1	—	6
Total	1.958	1.218	1.102	1.006	1.350	2.284	3.587	5.575	6.569	5.595	3.902	2.935	37.081

PROPHYLAXIS

There is no doubt as to the value of vaccination and revaccination in the prophylaxis of small-pox, From the very beginning physicians have reccommended it with the greatest insistence propagating it with enthusiasm and conviction.

In the city of Rio de Janeiro, the vaccine was introduced in 1804; it was imported from Portugal and since, it has been employed regularly, attenuating to considerable degree the epidemics of small-pox which have afflicted us. Even yet there is much to be done before all the benefit that can be expected from the use of this prophylaxis is obtained. Moral and material difficulties of the greatest strength have opposed the application of the decided ideas of the General Board of Public Health as to the necessity of issuing a law making compulsory vaccination and revaccination. In 1904 an attempt was made with no result, serving even as a motive for a revolution against the Government which was promptly suffocated in an absolute manner.

In spite of the absence of such a law, much has been done by indirect means and thanks to the advice of the sanitary authorities among the different classes of the population.

Since 1894, especially, the number of vaccinations and revaccinations has increased gradually, thanks to the creation of the Municipal Institute for Vaccination, a model establishment which prepares excellent animal vaccine with no degeneration of the virus which, little by little, was losing, formerly, its immunising power.

From 1846 to 1889, without counting 12 years in which no statistics were taken, 151.423 persons were vaccinated in Rio de Janeiro i. e. an average 4.731 persons per annum; from 1895 to 1911, 499.435 persons were vaccinated, say: an average of 29.378 per annum.

Vaccination and revaccination are always practised by the persons charged with attending to public health, whenever there occur any cases of small-pox in persons residing in infected houses. During the visits paid by the sanitary police and during the period of medical supervision, the occupants of the infected houses are likewise vaccinated and revaccinated. Further vaccination and revaccination are obligatory in the case of all children admitted into public and private schools and of all persons who apply for public employments or working in factories.

It is not necessary to recur to new facts in order to ascertain the real and positive value of the measure in question, in the prophylaxis of smal-pox. The statistic tables of the leading countries are known all over the world, and the coefficient of the mortality of vaccinated persons is too small as compared with that of those who are not vaccinated. In the city of Rio de Janeiro this coefficient is clearly shown among individuals who are taken to the isolation hospitals.

Thus, of the 5731 patients who were under treatment in the S. Sebastião Hospital, from 1897 up to 1903, 1558, had been vaccinated and 4.125 had not. But of these 992 had been vaccinated more than 10 years before when the immunity period had already elapsed.

In the great scourge of 1904, 3852 patients were treated in the same hospital, ouly 538 of which had been vaccinated less than 10 years before, i. e. 83 per cen were not vaccinated.

Small-pox is highly contagious in all periods of its evolution its germ diffusing itself energetically and persistently from the patients, from the places where they live, from their clothing and objects of their use.

The direct or indirect infection is transmitted by the patient to persons in good health by means of the infectious matter contained in the spots on the skin, the scabs, the spittle, the nasal secretion, the saliva and the blood.

Prophylaxis of the disease consists, therefore, besides vaccination and revaccination :

(*a*) — in the compulsory declaration of the cases ;
(*b*) — in the isolation of the patients ;
(*c*) — in the disinfection of the premises, clothes and objects infected ;

The isolation of the patients is made in hospitals or in their own dwellings, in accordance with the conditions of the houses where the cases occur.

The disinfection is obligatory in all cases of recovery removal or death of the patients aud it extends not only to the houses where the said disease is declared but also to all objects existing therein.

In cases of domiciliary isolation all persons, pieces of cloth for bedding and other purposes, utensils used by the patient and further objects existing in the rooms contaminated shall be thoroughly disinfected during the course of the disease.

Death-rates from small-pox in Rio de Janeiro

1869-1911

Urban districts

YEARS	DEATHS	POPULATION	RATE PER 100.000 PER ANNUM
1869	34	189.529	17.9
1870	338	199.773	169.1
1871	120	213.713	56.1
1872	921	225.540	40.8
1873	1.629	233.473	697.7
1874	576	241.691	238.3
1875	363	250.212	145.0
1876	169	259.051	65.0
1877	103	268.228	38.4
1878	2.175	277.761	783.0
1879	197	287.672	68.4
1880	27	297.983	9.0
1881	127	308.721	41.1
1882	937	319.910	292.8
1883	1.366	331.582	411.9
1884	90	343.767	26.1
1885	4	356.500	1.1
1886	164	369.820	44.3
1887	3.357	383.766	874.7
1888	171	398.386	42.9
1889	609	413.728	147.1
1890	361	429.848	83.9
1891	3.944	440.118	896.1
1892	369	450.636	81.8
1893	54	461.411	11.7
1894	86	472.454	18.2
1895	1.865	483.773	385.5
1896	422	495.380	85.1
1897	36	507.286	7.0
1898	65	519.503	12.5
1899	1.395	532.042	262.1
1900	590	544.917	108.2
1901	1.414	553.140	253.3
1902	580	571.728	101.4
1903	805	585.695	137.4
1904	3.566	600.057	594.2
1905	256	614.831	41.6
1906	9	625.756	1.4
1907	125	636.018	19.6
1908	6.545	637.089	1027.3
1909	274	649.362	42.1
1910	1	669.781	0.14
1911	6	708.669	0.84

V

DIPHTHERIA

This highly contagious disease, well known even in antiquity, was not thoroughly studied from the clinical and anatomo-pathological point of view until 1883. Its true origin however, was determined only in the following year when Löffler isolated, cultivated and inoculated, in different animals, the bacillus recognised by Klebs in the false diphtheric membranes.

In the city of Rio de Janeiro, diphtheria was unknown until 1858, when about the middle of that year, this disease made its appearance under a very serious form and with a contagious character, making innumerable victims.

In 1859 the disease increased, generalised itself suddenly and constituted a terrible epidemic of a serious aud extensive character, which declined in June to break out again in August and September, carrying off a large number of victims. In 1860 the disease appeared again from May to September, without an epidemical character, and since then, it has prevailed in Rio de Janeiro under an endemic form.

The death rate of diphtheria in the city of Rio de Janeiro has been exceeding low as compared with that of other cities in the world, as may be seen in the respective diagram.

Mortality from diphtheria in Rio de Janeiro

1903-1911

Federal District

YEARS	POPULATION	DEATHS	RATE PER 100.000
1903	749.180	52	6.94
1904	771.276	55	7.13
1905	794.266	51	6.42
1906	811.443	46	5.66
1907	824.040	39	4.73
1908	825.812	52	6.29
1909	842.822	34	4.03
1910	870.475	39	4.48
1911	921.987	43	4.66

Mortality from diphtheria in Rio de Janeiro (Urban districts). 1868-1911

YEARS	DEATHS	YEARS	DEATHS
1868	17	1890	23
1869	25	1891	42
1870	11	1892	35
1 71	32	1893	16
1872	30	1894	31
1873	17	1895	27
1874	32	1896	14
1875	26	1897	17
1876	34	1898	7
1877	28	1899	21
1878	25	1900	15
1879	18	1901	36
1880	9	1902	35
1881	7	1903	51
1882	94	1904	51
1883	144	1905	43
1884	89	1906	41
1885	126	1907	36
1886	45	1908	43
1887	120	1909	31
1888	118	1910	36
1889	64	1911	35

PROPHYLAXIS

The parts of the body containing the specific baccillus of diphtheria are: the false membranes, the saliva of the mouth, the products of expectoration and the nasal flux. They contaminate the rooms, the furniture, the bed clothes, the clothes in general and all objects and utensils belonging to the patient.

The safest means of prophylaxis, therefore, in order to avoid the propagation of this terrible disease of the toxic type, the contagion of which is established either by the patient directly or through the clothes and objects infected, are measures of isolation and disinfection.

The prophylatic measures stipulated by the regulation consist of the use of anti-diphtheric serum and the sanitary authority is obliged to act upon any case being notified, in the following manner, viz:

a)—the assistant doctor with the agreement of the family and the patient, shall inject the latter with the anti-diphtheric serum, in case of his not having undergone such treatment already;

b)—he shall immunise all persons who may like to submit themselves to the said operation;

c)—he shall communicate all the prophylatic advice as organised by the General Board of Public Health;

d)—he shall provide for the isolation of the patient;

e)—he shall make a rigorous disinfection of the dwelling.

When the patient is in a college, asylum or in any similar establishment, he shall be taken away and all persons residing therein or such as may have been in contact with the patient shall be submitted to a severe medical inspection.

The immediate notification of suspicious cases, the perfectioning of the bacteriological diagnosis and the use of anti-diphtheric serum are elements which largely contribute to the decrease of mortality from diphtheria.

Death-rates from diphtheria in Rio de Janeiro

1869-1911

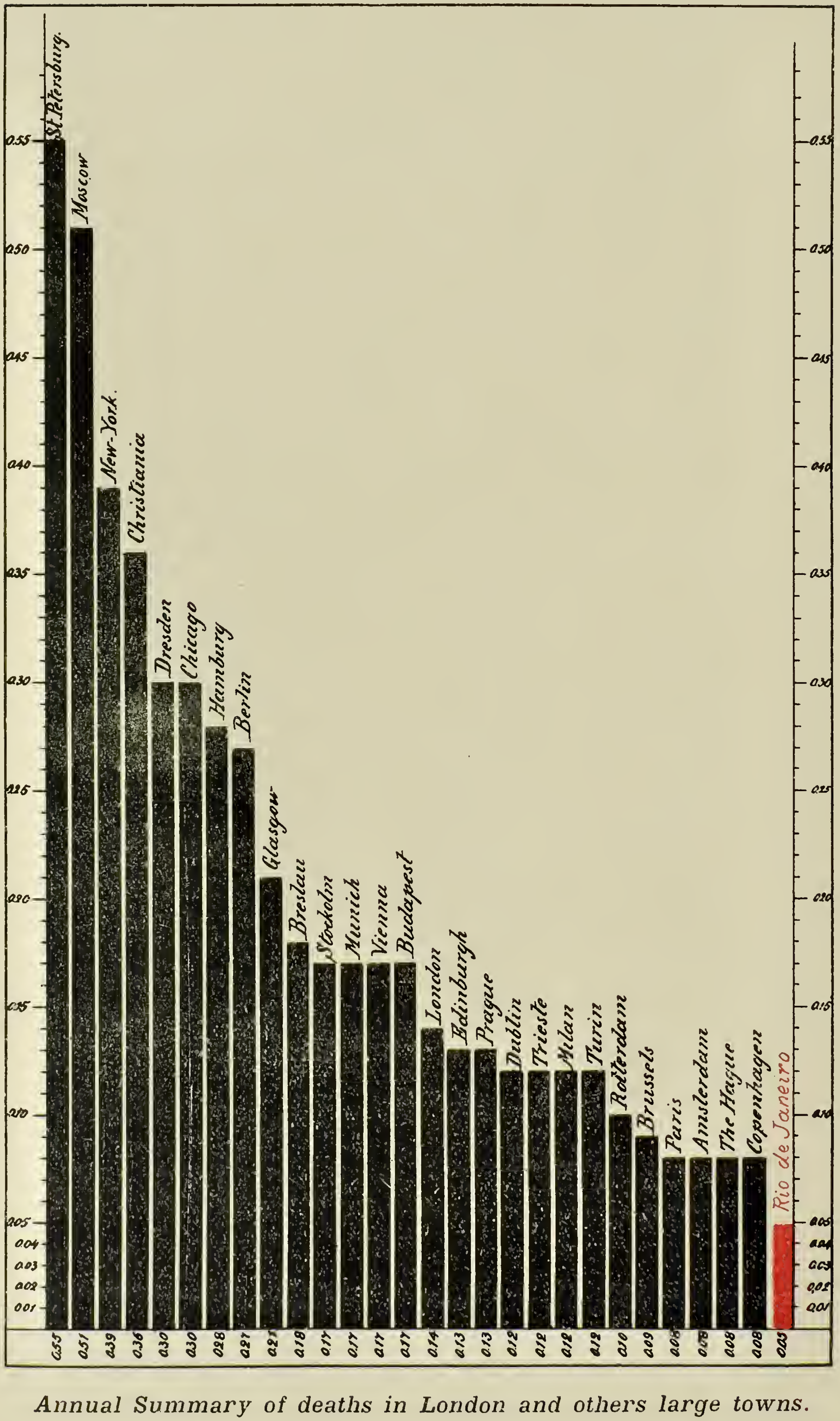
Urban districts

YEARS	DEATHS	POPULATION	RATE PER 100.000 PER ANNUM
1869	25	189.529	13.1
1870	11	199.773	5.5
1871	32	213.713	14.9
1872	30	225.540	13.3
1873	17	233.473	7.2
1874	32	241.691	13.2
1875	26	250.212	10.3
1876	34	259.051	13.0
1877	28	268.228	10.4
1878	25	277.761	9.0
1879	18	287.672	6.2
1880	9	297.983	3.0
1881	7	308.721	2.2
1882	94	319.910	29.3
1883	144	331.582	43.4
1884	89	343.767	25.8
1885	126	356.500	35.3
1886	45	369.820	12.1
1887	120	383.766	31.2
1888	118	398.386	29.6
1889	64	413.728	15.4
1890	28	429.848	6.5
1891	42	440.118	9.5
1892	35	450.636	7.7
1893	16	461.411	3.4
1894	31	472.454	6.5
1895	27	483.773	5.5
1896	14	495.380	2.8
1897	17	507.286	3.3
1898	7	519.503	1.3
1899	21	532.042	3.9
1900	15	544.917	2.7
1901	36	558.140	6.4
1902	35	571.728	6.1
1903	51	585.695	8.7
1904	51	600.057	8.4
1905	48	614.831	7.8
1906	41	625.756	6.5
1907	36	636.018	5.6
1908	48	637.089	7.5
1909	31	649.362	4.8
1910	36	669.781	5.3
1911	35	708.669	4.9

DIPHTHERIA AND CROUP

Annual Death-rates per 1.000 persons living

1906 — 1910



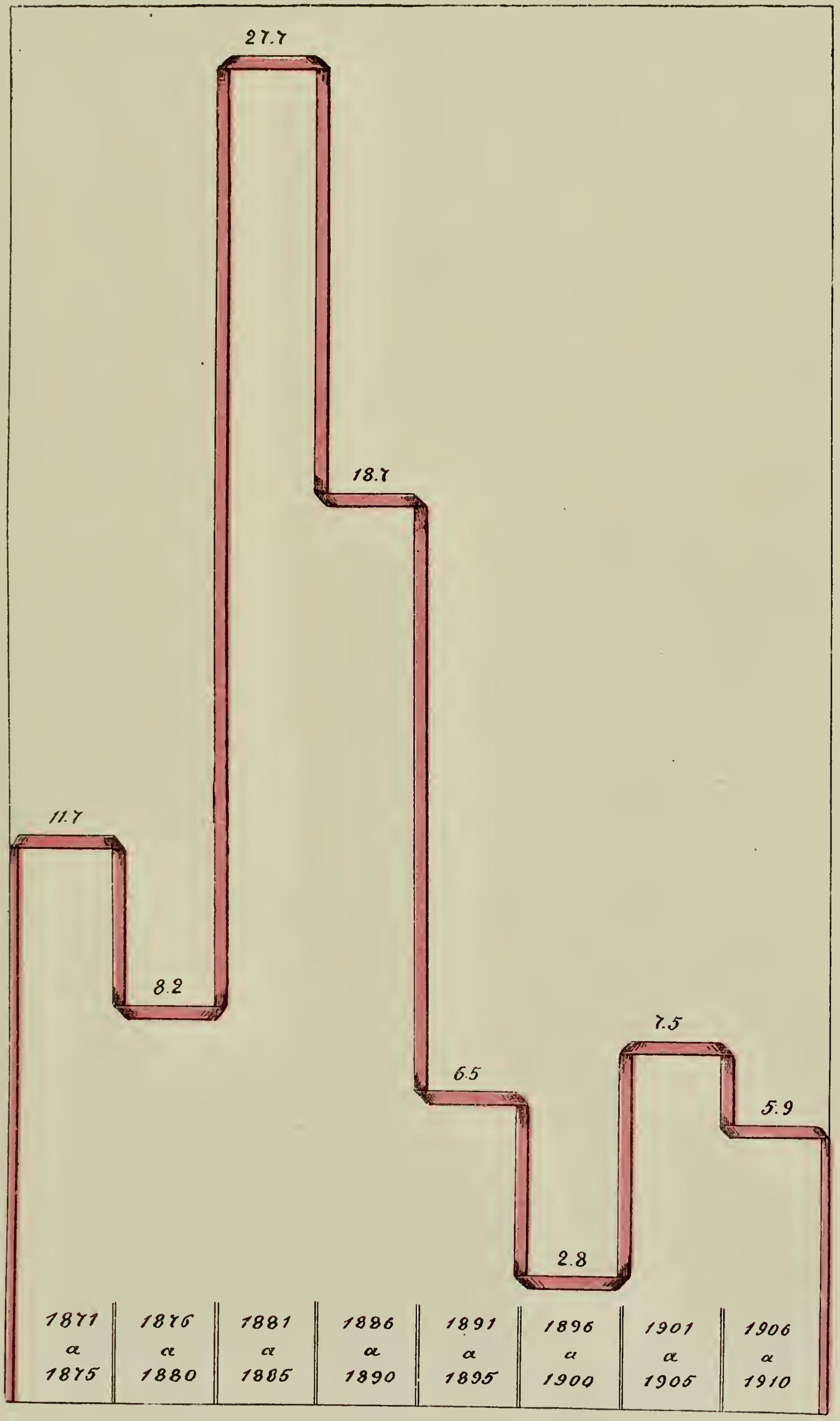
Annual Summary of deaths in London and others large towns.

MORTALITY FROM DIPHTHERIA AND CROUP

in the urban district of ***RIO DE JANEIRO***

Quinquennal death-rates per 100.000 persons living

1871 — 1910



VI

PUERPERAL SEPTICŒMIA

in Maternity Hospitals

Puerperal septicœmia is included in the table of diseases of compulsory notification, only, however, when it is declared in Maternity Hospitals. Even so only mortal cases are notified to the sanitary authorities. All methods of disinfection appropriate to the nature of the disease are then put into practice in order to prevent its development.

In Maternity Hospitals all prophylatic measures are strictly observed, in order to prevent the infectious agents from coming into contact with such as may give admittance to the disease.

All instruments, clothes, bandages, and liquids for washing purposes shall be thoroughly sterilised,

The physicians and accoucheurs treating patients with puerperal septicœmia cannot assist other women in labour, without taking the greatest and strictest precautions as regards cleanliness and disinfection.

The patients in the Maternity Hospitals are properly isolated. The room occupied by them as well as their beds, bed-clothes and clothes of their own use, are thoroughly disinfected after their recovery or their death.

Lazaretto of Ilha Grande (1.st and 2.nd class pavilions).

Furthermore, the disease was considered as one of compulsory notification, so that any case which occurs is forthwith treated with all precaution required to avoid its propagation.

For this reason the patient is isolated immediately and whatever may serve as a vehicle for the transmission of the germ of infection (floors, clothes, objects of use etc.) is severely disinfected. Besides this, the hygiene doctor at once seeks for the origin of the disease, making such intimation as may be necessary to the landlord or person responsible for the house to remove any defects which he may have noted in the same and which may be deemed to be the cause of the disease.

According to the statistic data hereinafter transcribed, it is easy to follow the evolution of typhoid fever in Rio de Janeiro since 1868.

Mortality from typhoid-fever in Rio de Janeiro

1903-1911

Federal District

YEARS	POPULATION	DEATHS	RATE PER 100.000
1903	749.180	135	18.01
1904	771.276	80	10.37
1905	794.266	58	7.30
1906	811.443	71	8.74
1907	824.040	58	7.03
1908	825.812	58	7.02
1909	842.822	54	6.40
1910	870.475	42	4.82
1911	921.987	47	5.09

Mortality from typhoid-fever in Rio de Janeiro (Urban districts). 1868-1911

YEARS	DEATHS	YEARS	DEATHS
1868	321	1890	97
1869	180	1891	110
1870	268	1892	117
1871	192	1893	76
1872	206	1894	144
1873	627	1895	90
1874	149	1896	142
1875	167	1897	80
1876	239	1898	95
1877	153	1899	126
1878	208	1900	105
1879	168	1901	115
1880	178	1902	184
1881	186	1903	109
1882	140	1904	69
1883	160	1905	51
1884	154	1906	65
1885	189	1907	54
1886	132	1908	56
1887	90	1909	48
1888	104	1910	37
1889	144	1911	40

Death-rates from typhoid-fever in Rio de Janeiro

1869-1911

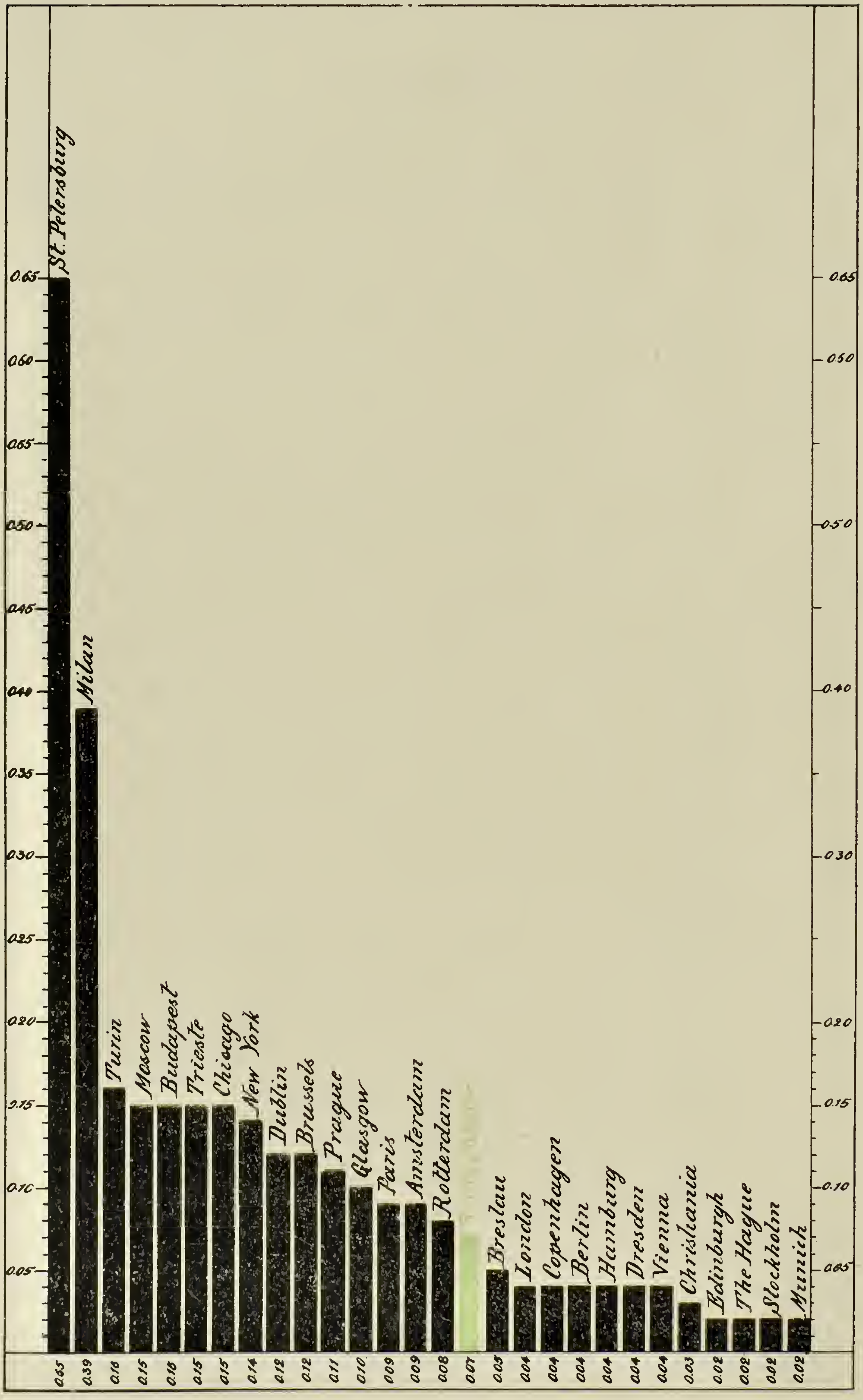
Urban districts

YEARS	DEATHS	POPUTATION	RATE PER 100.000 PER ANNUM
1869	180	189.529	9.4
1870	263	199.773	13.4
1871	192	213.713	8.9
1872	206	225.540	9.1
1873	627	233.473	26.8
1874	149	241.691	6.1
1875	167	250.212	6.6
1876	239	259.651	9.2
1877	153	268.228	5.7
1878	208	277.761	7.4
1879	168	287.672	5.8
1880	178	297.983	5.9
1881	186	308.721	6.0
1882	140	319.910	4.3
1883	160	331.582	4.8
1884	154	343.767	4.4
1885	189	356.500	5.3
1886	132	369.820	3.5
1887	90	383.766	2.3
1888	104	398.386	2.6
1889	144	413.728	3.4
1890	97	429.848	2.2
1891	110	440.118	2.4
1892	117	450.636	2.5
1893	76	461.411	1.6
1894	144	472.454	3.0
1895	90	483.773	1.8
1896	142	495.380	2.8
1897	80	507.286	1.5
1898	95	519.503	1.8
1899	126	532.042	2.3
1900	105	544.917	1.9
1901	115	558.140	2.0
1902	184	571.728	3.2
1903	109	585.695	1.8
1904	69	600.057	1.1
1905	51	614.831	0.8
1906	65	625.756	1.0
1907	51	636·018	0.8
1908	56	637.089	0.8
1909	48	649.362	0.7
1910	37	669.781	0.7
1911	40	703.669	0.5

ENTERIC FEVER

Annual Death-rates per 1.000 persons living

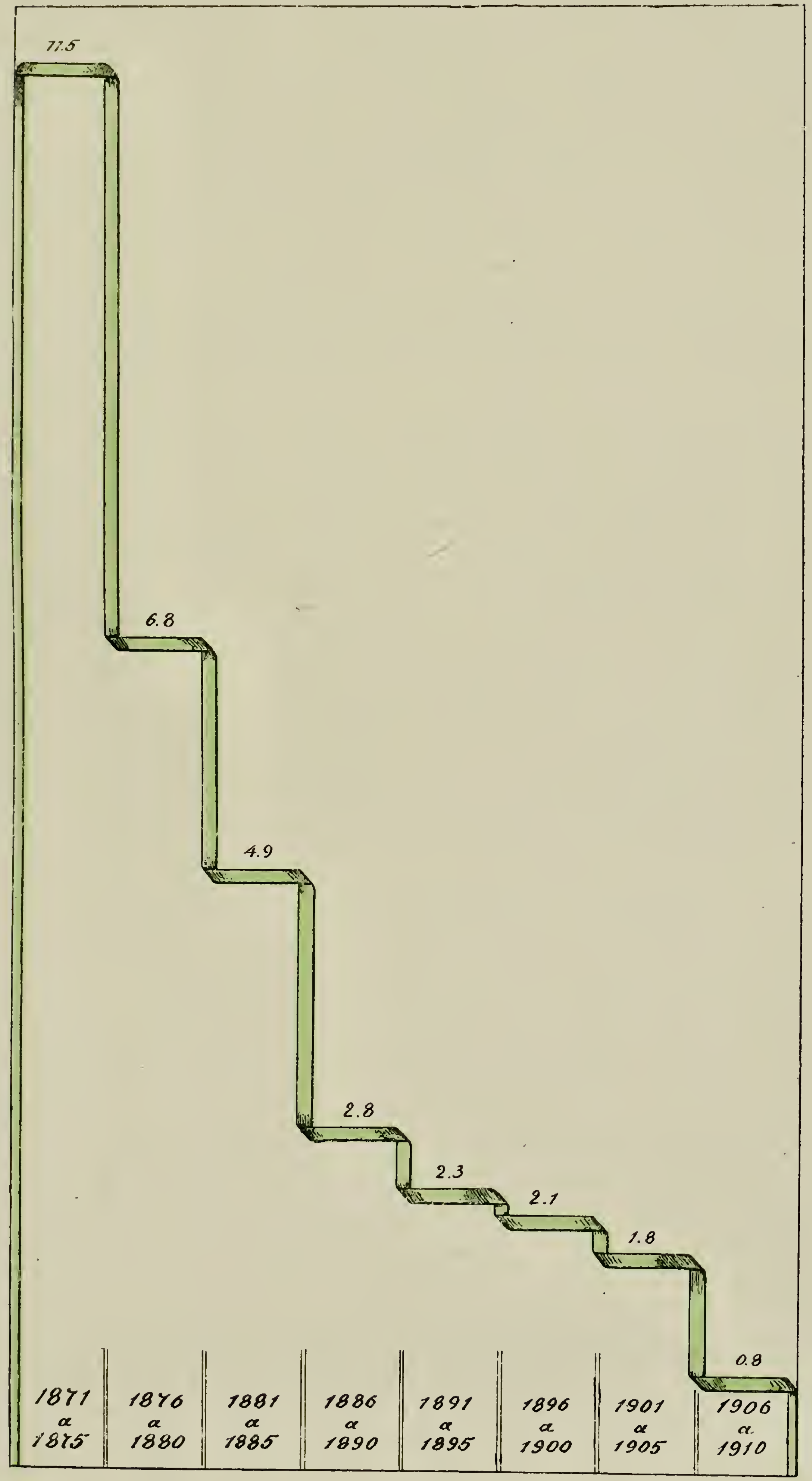
1906 — 1910



Annual Summary of deaths in London and others large towns.

MORTALITY FROM ENTERIC FEVER

in the urban district of RIO DE JANEIRO
Quinquennal death-rates per 100.000 persons living
1871 — 1910



IX

LEPROSY

Leprosy constituted for many centuries a real scourge to mankind, attacking persons of all ages and professions in central Europe, Asia and Africa.

In the beginning of the XVth Century, however, this disease began to diminish its devastations until our days, occurring at present in an endemic form in the islands of the Mediterranean, the Black and the Caspian seas, on the coasts of Africa, in some countries of Asia, Syria, Palestine, in the West Indies, in Australia, in North, Central and South America.

Leprosy only made its appearance in Brazil after its discovery by the Portuguese, it being completely unknown to the natives.

There are no statistics of the first cases, it being known that in 1697 the Municipality of Rio de Janeiro requested from the Government a locality suitable for lodging leprosy patients.

Although many foreign writers state that leprosy reigns in a violent manner in Brazil, we can affirm that such disease very seldom occurs in some Northern States viz; Ceará, Piauhy, Rio Grande do Norte, Parahyba, Alagoas and Sergipe, and in some States of the South, namely: Santa Catharina, Paraná and Rio Grande do Sul.

In Minas Geraes, S. Paulo, Rio de Janeiro, Bahia, Pará, Amazonas, Pernambuco and Maranhão this disease is much more disseminated it being impossible, however, to say what is the precise number of leprosy patients existing, on accouut of the lack of statistics.

In the remaining States of Brazil leprosy is to be found in some localities, others being completely spared.

PROPHYLAXIS

After the discovery of the bacillus of Hansen in 1871, which confirmed the contagious nature of the disease, experiments have been made in order to find out the means of inoculation of leprosy in the human body, it being supposed that mosquitoes and other insects, (bugs, fleas, etc.), may be the real agents of transmission. While nothing positive has been found with regard to this matter, prophylaxis of leprosy is limited to the isolation of the patient to careful assistance, and to thorough disinfection of his clothes and objects of his own use.

The isolation is a very useful measure and in some parts of Brazil the results have been excellent.

In Rio de Janeiro the poor who suffer from leprosy are isolated in a large and well fitted private establishment, at the expense of one charitable institution.

This hospital, built in 1752, is assisted by the Government. It has undergone several transformations disposing at present of accomodation for about one hundred men, women and children who are taken thereto by the sanitary and police authorities, either coming from the city of Rio de Janeiro, itself, or from the nearest States where no such hospitals are to be found.

This hospital, in spite of its regular organisation, does not substitute the special leper colonies, necessary for the help of lepers, to which great study has been given in Brazil as the best prophylactic means to impede the propagation of the evil.

Sanitary law considers leprosy as a disease of compulsory notification and stipulates that patients of leprosy be isolated in a hospital or in a dwelling; it prohibits their residence in collective dwellings; it forbids them to work in certain professions where they are liable to transmit the disease; but such measures cannot to rigorously put into practice while the leper colonies are not established and kept with all comfort required and with the necessary commodities.

The disinfection is always made with the greatest care not only in the houses occupied by people suffering from leprosy but also in the «Hospital dos Lazaros» itself, where they are lodged.

In the hospital the sick wards are carefully disinfected as well as the bed clothes, clothing and all objects belonging to the patients. The cutaneous sores of patients from leprosy are protected by means of special bandages to avoid the propagation of the bacilli of leprosy. All bandages and utensils used are burnt.

Besides the above measures, others are adopted among us which complete the prophylaxis of leprosy such as: protection of children born of people attacked with leprosy against contact with infected centres, inspection in schools, prohibition of vaccination from arm to arm, interdiction of marriage of persons suffering from leprosy.

X

TUBERCULOSIS

The first writers of Brazilian History never made the slightest reference to tuberculosis, so that it is impossible to know when this disease was imported, as also what has been its precise evolution in our midst.

All leads us to believe, however, that it was brought by our first colonists and that, upon its arrival here, it began to develop, perhaps with great rapidity.

In Rio de Janeiro, at least, its growth was very rapid and attained such proportion by the end of the century before last that a practicioner of high reputation at that epoch affirmed that «one third of the population died of purulent tubercles».

This, of course, was to be expected, having in view on the one hand, the absolute ignorance of the people in those days with regard to the nature of the disease and, on the other, the conditions of the environment to which it had been transplanted.

This environment could not have been more favourable to the propagation of the disease, as, besides having a naturally hot and damp climate the city had been constructed in defiance of the most rudimentary principles of hygiene, as we have stated in a previous chapter.

The houses were generally small and of only a ground floor, with no air nor light, and during the rainy season, they were invaded by water which, due to the absolute lack of drainage, could not readily flow away.

In these houses, occupied by too many tenants, no sanitary inspection had ever been made, and as the nature of tuberculosis was entirely unknown and its contagiousness never suspected, no one ever tried to avoid it.

It is easy to understand that, favoured by this combination of circumstances, the disease could not fail to make headway, chiefly after 1808, when our ports were thrown open to universal trade.

In fact, from that epoch the population began to increase by leaps and bounds, due to the considerable influx of immigrants who through lack of houses, contributed to render the population more dense and to the construction of the so called «estalagens» and «cortiços» rows of small houses shut in and crowded together, badly constructed and intended for the poor, but built in such a manner, that in the words of a writer of those days they seemed to be intended rather for animals than for men.

Upon examination of the discussions of the «Medical and Surgical Society» founded in Rio de Janeiro in 1828, one can see that tuberculosis at that epoch occupied the careful attention of the medical profession who made attempts to find out its causes and to discover the means for its destruction.

Unfortunately, due to the fact that the Statistical Department was then non-existent, it is impossible to make an exact estimate of the mortality caused by the disease.

No certain knowledge of this can be obtained before the year 1860 when, for the first time, the separate registration of the number of deaths caused by tuberculosis was first made.

In that year, it made no less than 1891 victims, which means that the average number of deaths caused by tuberculosis was 12.21 in 1.000 inhabitants—which death-rate of itself is sufficient to show the firm foothold that the disease had attained.

Fortunately while it is certain that ist development had been considerable, it is no less certain, that it began to decrease rapidly as and when the Government carried out the works of improvement of the hygienic conditions of the city, so much so that, nowadays, the death-rate from the disease is approximately only 4.5 deaths per 1.000 inhabitants, i. e. a death-rate three times smaller that the one above referred to.

In the following table may be seen the number of deaths caused by tuberculosis in the urban zone of Rio de Janeiro, distributed accordance to the years, from 1860 to 1911.

To manifest its decrease the death-rates were calculated year by year, as well as the average death-rate for each period of 4 years.

We do not include the table of mortality in the suburban zone because the statistics of that zone were initiated only in 1903, so that their insertion in the table would affect the comparison.

However, we ought to say that the death-rate of the disease in that zone is more or less the same as in the urban zone.

The table referred to above, is as follows:

Mortality from tuberculosis in Rio de Janeiro

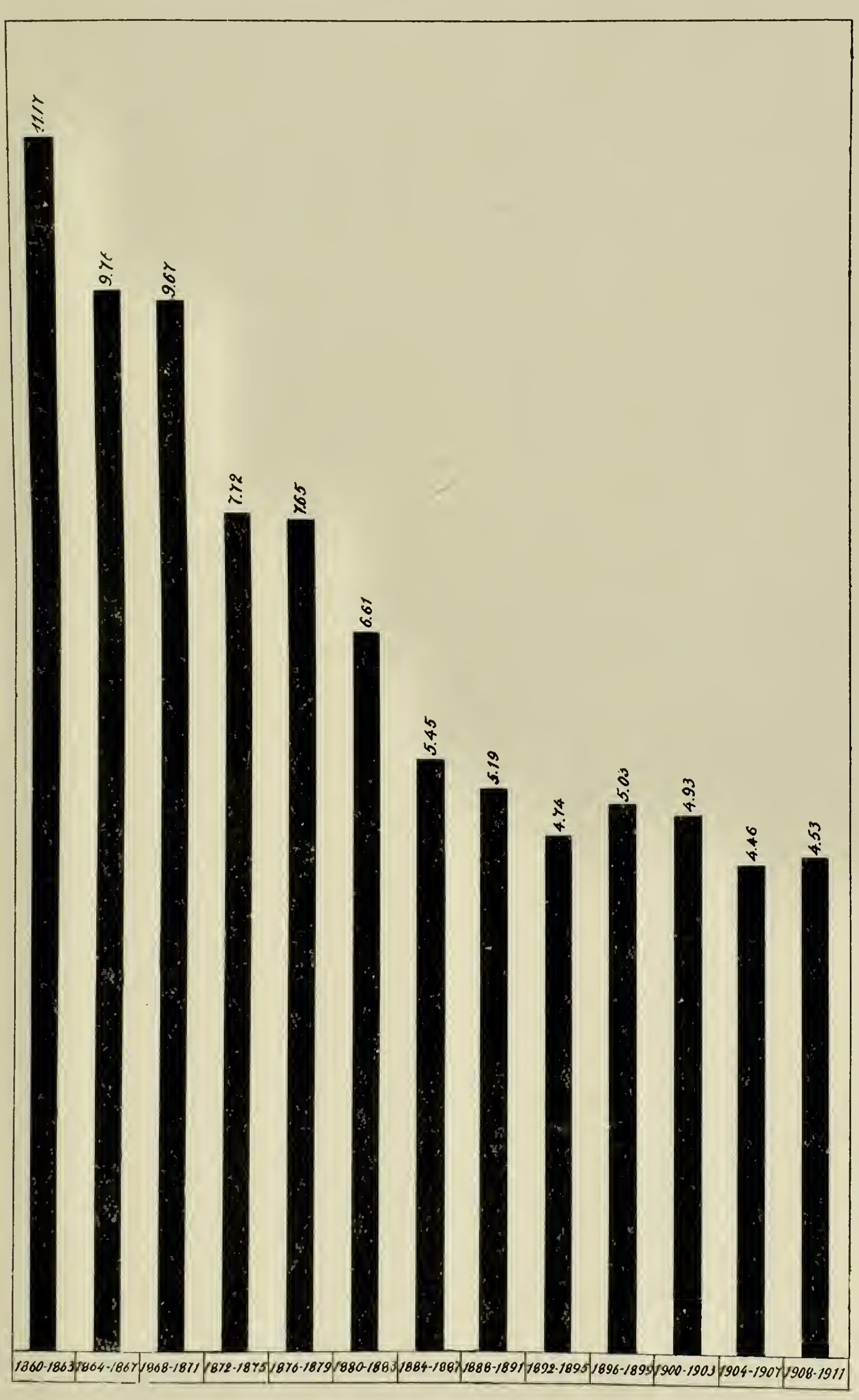
1860-1911

Urban districts

YEAR	POPULATION	DEATHS	DEATH RATE IN 1.000 INHABITANTS	AVERAGE IN 4 YEARS
1860	154.764	1.891	12.21	
1861	158.205	1.679	10.61	
1862	161.741	1.844	11.40	
1863	165.376	1.731	10.46	11.17
1864	169.115	1.563	9.24	
1865	172.962	1.659	9.59	
1866	176.921	1.694	9.57	
1867	180.999	1.925	10.63	9.76
1868	185.200	1.780	9.61	
1869	189.529	1.889	9.96	
1870	191.002	1.861	9.74	
1871	213.713	2.003	9.37	9.67
1872	222.213	1.770	7.96	
1873	233.473	1.900	7.13	
1874	241.691	1.888	7.81	
1875	250.212	1.998	7.98	7.72
1876	259.051	1.968	7.59	
1877	268.228	2.055	7.66	
1878	277.761	2.197	7.90	
1879	287.672	2.145	7.45	7.65
1880	297.983	2.131	7.15	
1881	308.721	2.032	6.58	
1882	319.910	2.080	6.50	
1883	331.582	2.072	6.24	6.61
1884	343.767	1.943	5.65	
1885	356.500	1.884	5.28	
1886	369.820	2.077	5.61	
1887	383.766	2.025	5.27	5.45
1888	398.386	1.990	4.99	
1889	413.728	2.177	5.26	
1890	429.848	2·202	5.12	
1891	440.118	2.378	5.40	5.19
1892	450.636	2.188	4.85	
1893	461.411	2.121	4.59	
1894	472.454	2.127	4.50	
1895	483.773	2.441	5.04	4.74
1896	495.380	2.661	5.37	
1897	507.286	2.448	4.82	
1898	519.503	2.593	4.99	
1899	532.042	2.645	4.97	5.03
1900	544.917	2.726	5.00	
1901	558.140	2.743	4.91	
1902	571.728	2.744	4.80	
1903	585.695	2.917	5.03	4.93
1904	600.057	2.752	4.59	
1905	614.831	2.822	4.57	
1906	625.756	2.782	4.44	
1907	644.688	2.762	4.27	4.46
1908	661.794	3.099	4.86	
1909	649.362	2.884	4.44	
1910	669.781	3.080	4.59	
1911	708.669	3.002	4.23	4.53

MORTALITY FROM TUBERCULOSIS

in the urban district of ***RIO DE JANEIRO***
Quinquennal death-rates per 100.000 persons living
1860 — 1911



PROPHYLAXIS The prophylaxis of tuberculosis in Rio de Janeiro has consisted in the application of direct and indirect measures, the former having specially in view the disease, and the latter of a general character, intended to modify its sphere of operation.

These latter are, the measures of the sanitary police which were first put into practice in 1851, when the Imperial Government took over the services of hygiene which were under the control of the Municipality, the latter, through lack of means, not being able to give them the development they required.

At present the sanitary policing of Rio de Janeiro is extremely strict, as we have said before and amongst the measures of a general character which we must mention as capable of contributing considerably to the decrease of tuberculosis, it is well to mention first those referring to residences.

Since 1904 no house has been consrtucted in Rio de Janeiro without the plan thereof having been duly submitted for approval to the Department of Sanitary Engineering, which department requires that all necessary modifications be introduced therein in order that it be in accordance with the principles of hygiene.

On the other hand no unoccupied house may be let without its being previously examined by the Sanitary Inspector who grants permission for such purpose only when the house presents the hygienic conditions required. If not, the proprietor is summoned to make the necessary works of repair in order to remove any defects which may be discovered, such as: lack of air-spaces and windows.

Thanks to these measures the residence houses in Rio de Janeiro have undergone great modifications, it being hoped that, in a short time, this transformation shall have covered the whole city.

Besides this, the sanitary regulations prohibit the overcrowding of houses, an all premises left by their tenants must be submitted to a rigorous desinfection before being occupied again, a measure which is undoubtedly of the highest importance from the point of the prophylaxis of tuberculosis.

As direct measures against the propagation of this disease, the sanitary regulations provide in the first place for the compulsory notification of the disease whenever a death occurs from it or when, there being elimination of the specific bacilli, the patients be in the following conditions:

(*A*) — If they reside in a boarding-house.

(*B*) — If they work in factories, shops or similar establishments.

(*C*) — If they be employed in eating houses, hotels, confectioneries, cafés, grocery stores, or other similar establishments in which alimentary substances may be prepared, or in pharmacies or schools.

(*D*) — If they change their addresses.

(*E*) — If they be employed as nurses, servants, waiters or cooks.

The regulations provide further:

(*A*) — No person suffering from tuberculosis may reside in a boarding-house, the landlord or such responsible person as may admit him being liable to payment of a fine of 500$000.

(*B*) — There shall be boarding-houses for patients suffering from tuberculosis which shall have special licence from the General Board of Public Health to receive them, once the said houses comply with certain hygienic conditions as imposed by the said Board.

(*C*) — No person suffering from tuberculosis may be employed in factories or shops, eating-houses, hotels, confectioneries, etc.

For this reason the persons in charge of these establishments, before taking an employée, must require from him a medical certificate in which it shall be declared that the applicant does not suffer from tuberculosis.

Any doctor who shall furnish a false certificate shall be liable to the penalties stipulated in the penal code, and the responsible manager of the establishment who shall infringe this provision of the regulation (Bye-law) shall be liable to payment of a fine of 500$000.

(*D*) — In commercial houses as well as in hotels, boarding-houses, apartment houses, beer-houses, billiard rooms, restaurants, colleges, schools, theatres, music-halls, public offices, meeting-houses, churches, etc, the use of spitoons shall be obligatory; the number of same as well as their type and condition shall be indicated by the sanitary authorities.

(*E*) — In hospitals it is forbidden to accommodate patients suffering from tuberculosis in the same wards with other patients, the managers of the said establishments being bound to provide for the isolation of patients of tuberculosis in the strictest possible manner.

(*F*) — Whenever a patient suffering from tuberculosis changes his address, his former residence shall be thoroughly desinfected, the same being done in any house whenever there occurs a death due to such disease.

Besides the provisions set forth above, the regulations stipulate as a necessary measure the examination by means of tuberculin of animals existing in stables in the urban zone.

When the reaction indicates the existence of tuberculosis, the sanitary authority shall cause the said animal to be immediately branded, and thenceforth it can supply no more milk nor stay in the stable, under penalty of the proprietor's paying a fine of 500$000 or a month's imprisonment.

This has been, roughly the action of official hygiene with regard to the prophylaxis of tuberculosis amongst us.

Privately, however, dispensaries and leagues against the said disease have been founded both in Rio de Janeiro and in other cities, to which, nevertheless, there has been no lack of assistance from the civil power.

XI

MALARIAL FEVER

Malaria is a disease, endemic in certain regions of Brazil, among which is comprised the city of Rio de Janeiro. This city was, in fact, built on marshy lands, where said disease always existed. Unfortunately owing to lack of statistics it is impossible to known what was its precise death rate before the year 1869. There are however references made to it by different writers from which it may be concluded that in certain years the mortality caused by such disease was very high.

From 1869 onwards the number of deaths caused by malaria in the urban zone of the city of Rio de Janeiro was the following:

YEARS	POPULATION	DEATHS	COEFF. IN 100.000 INHABITANTS	
			PER ANNUM	PER SIX YEARS
1869	189.529	461	243.23	
1870	199.773	601	300.51	
1871	213.713	788	368.71	
1872	225.540	607	269.13	
1873	233.473	1.049	449.30	
1874	241.691	596	246.59	332.85
1875	250 212	908	362.89	
1876	259.051	805	310.74	
1877	268.228	737	274.76	
1878	277.761	953	343.10	
1879	287.672	766	266.27	
1880	297.983	763	256.05	
1881	308.721	642	207.09	326.33
1882	319.910	609	190.36	
1883	331.582	952	287.10	
1884	343.767	557	162.02	
1885	356.500	755	211.78	
1886	369.820	1 160	313.66	
1887	383.766	940	244.99	234.97

YEARS	POPULATION	DEATHS	COEFF. IN 100.000 INHABITANTS	
			PER ANNUM	PER SIX YEARS
1888	398.386	958	240 47	
1889	413.728	2.056	496.94	
1890	429.848	1.237	287.77	
1891	440.118	2.235	507.81	
1892	450.636	2.070	459.35	
1893	461.411	1.175	254 65	374 49
1894	472.454	1.889	399.82	
1895	483.773	1.749	361.53	
1896	495.380	2.294	463.07	
1897	507.286	1.151	226.89	
1898	519.503	1.607	309.33	
1899	532.042	1.336	251.10	335 29
1900	544.917	1.019	187.09	
1901	558.140	932	166.98	
1902	571.728	1.217	212.86	
1903	585.695	772	131.80	
1904	600.057	433	72.15	
1905	614.831	295	47.98	136 46
1906	625.756	266	42 50	
1907	636.018	239	37.57	
1908	637.089	277	43.47	
1909	649.362	227	34.95	
1910	669.781	187	27.91	
1911	708.669	176	24.83	35.20

The observation of the above data demonstrates two facts in the clearest manner, viz: 1st.—that the death rate from malaria in Rio de Janeiro was really very high; 2nd.—that from 1903 this coefficient began to decrease in a rapid and progressive manner, it being nowadays very much reduced.

As regards the first fact above referred to, it is well, however, to note that it may not represent the exact truth, i. e. the number of deaths caused by malaria may not have been so large as shown in the statistics it seeming very probable that a great part of said deaths may have been caused by other diseases, especially by yellow fever. This supposition has certain foundations.

It is known, in fact, that among our former practition rs the word malaria had a very extensive meaning; it being ascribed as the cause of the most different and varied troubies of the organism.

In almost every morbid state, malarial fever was encountered and therefore quinine was prescribed. When it was impossible to discover the cause of a neuralgia or of a refractory diarrhea, practitioners appealed to malaria.

The *larvated form* of this disease explained many clinical mysteries.

In 1897 reaction began. In that year one of the most remarkable professors of medical clinics we have had, the late Dr. Francisco de Castro, in a memorable speech he made as the chairman of a doctoral ceremony called attention to the exaggeration of that doctrine and even affirmed that malaria had almost disappeared in the urban zone of Rio de Janeiro. And this seems to be the truth.

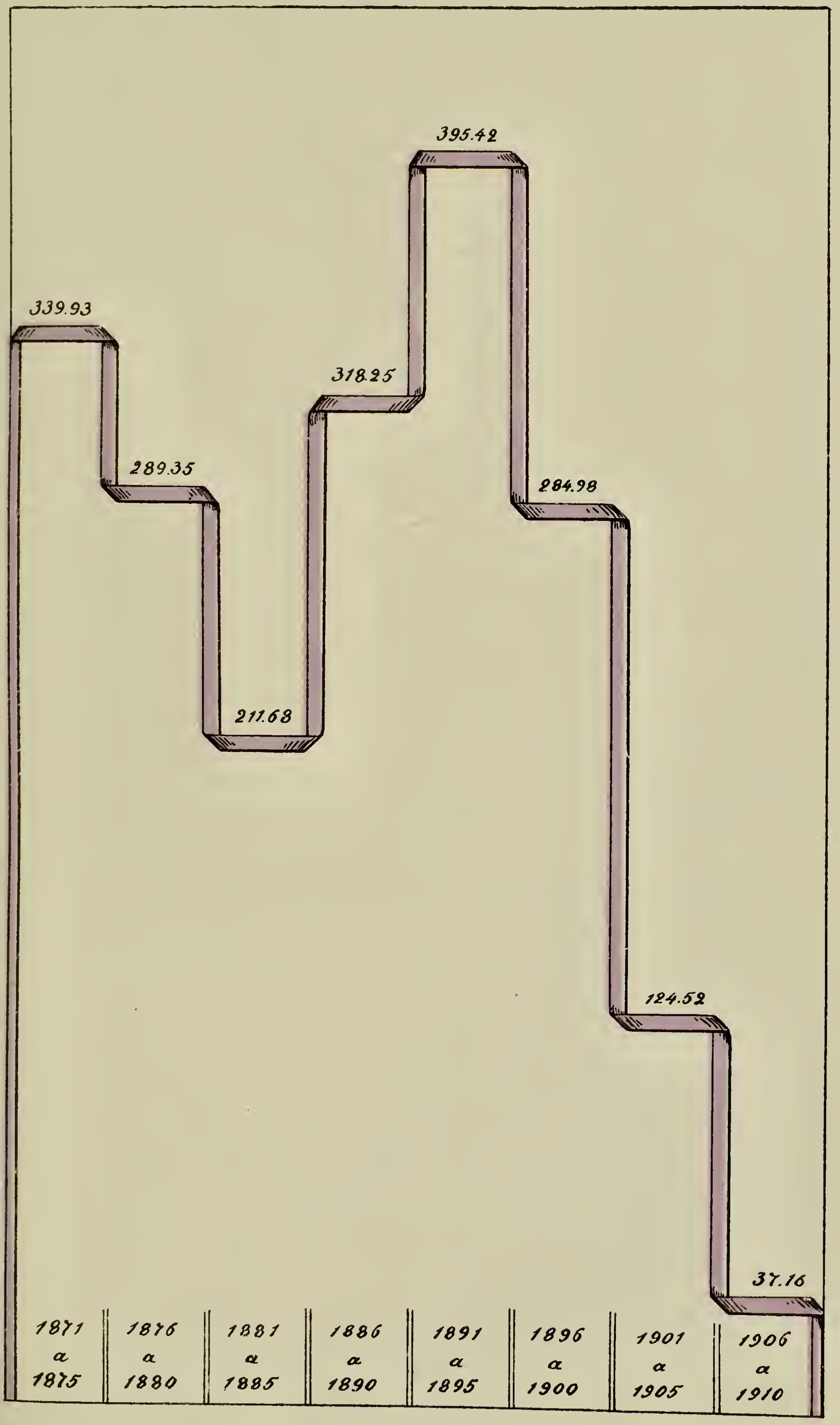
At present it can be affirmed that malaria occurs only in the suburban zones, in the surroundings ot the city where it has not yet been possible to do away with all the elements on which the hematozoario subsists.

It is certain that our statistics still show some deaths annually from malaria in the urban zone but is necessary to note that almost all these cases occur in the Hospital of Santa Casa of Misericordia, where are admitted many patients from the suburbs and from the interior of Brazil where this disease prevails. In the city of Rio de Janeiro properly called it is very seldom that an authentic case of malaria occurs.

In order to confirm to a certain extent what we have stated above, i. e.: that many cases recorded as malaria were determined by other diseases, and especially by yellow fever, it is sufficient to compare the statistics of mortality of both diseases. If we make such comparison, we verify that the mortality from malaria concided always with the great epidemics of yellow fever and that their progressive decrease began exactly in 1903 when the specific prophylaxis of the latter disease was initiated.

MORTALITY FROM MALARIA

in the urban district of RIO DE JANEIRO
Quinquennal death-rates per 100.000 *persons living*
1871 — 1910



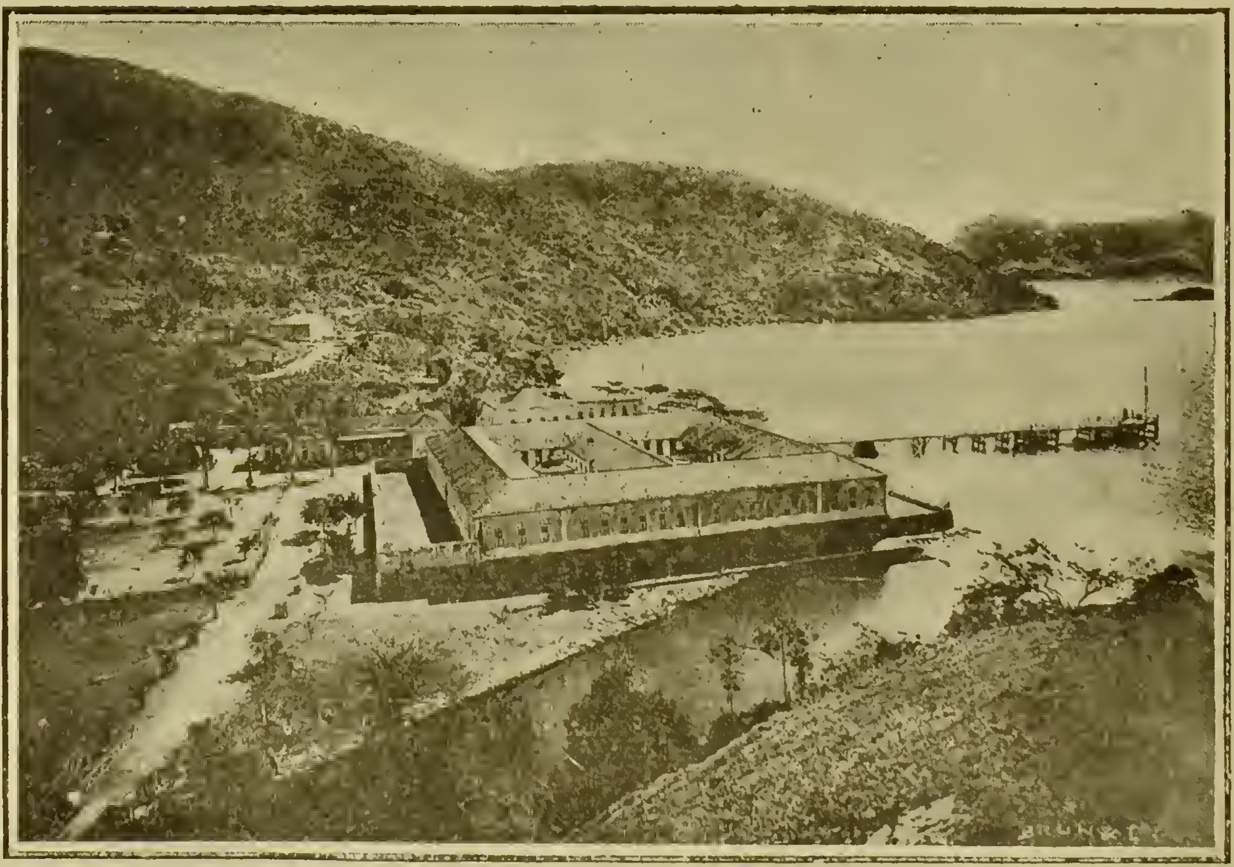
The table below presents the death-rates of the said diseases distributed by years, starting from 1869;

YEARS	MALARIA — DEATHS	YELLOW FEVER — DEATHS	YEARS	MALARIA — DEATHS	YELLOW FEVER — DEATHS
1869 . . .	461	272	1891 . .	2 235	4.456
1870 . . .	601	1 118	1892 . .	2.070	4.312
1871 . . .	788	8	1893 . .	1.175	825
1872 . . .	607	102	1894 . .	1.889	4 852
1873 . . .	1.049	3 659	1895 . .	1.749	818
1874 . . .	596	829	1896 . .	2.294	2.929
1875 . . .	908	1 292	1897 . .	1.151	159
1876 . . .	805	3 476	1898 . .	1.607	1.078
1877 . . .	737	282	1899 . .	1.336	731
1878 . . .	953	1 176	1900 . .	1.019	344
1879 . . .	766	974	1901 . .	932	299
1880 . . .	763	1 625	1902 . .	1.217	984
1881 . . .	642	257	1903 . .	772	584
1882 . . .	609	89	1904 . .	433	48
1883 . . .	952	1 608	1905 . .	295	289
1884 . . .	557	863	1906 . .	266	42
1885 . . .	755	445	1907 . .	239	39
1886 . . .	1 160	1 449	1908 . .	277	4
1887 . . .	940	137	1909 . .	227	—
1888 . . .	958	747	1910 . .	187	—
1889 . . .	2 056	2 156	1911 . .	176	—
1890 . . .	1 237	719			

From the above statement it may be said that if it is certain that Rio de Janeiro was a city, where formerly malaria reigned, it is also clear that nowadays it is almost free from that disease. It may be said that even in the urban districts the population of which was 708.669 inhabitants in 1911 the said disease no longer exists as almost the deaths registered occur in the Hospital of the Santa Casa of Misericordia and in other hospitals and are of persons coming from the suburbs and from the zones infected with malaria in the interior of the country. In the suburban zone itself the population of which was, in 1911, of 213.318 inhabitants, the mortality from malaria is not high. In fact from 1903 until now the deaths recorded, from this disease, are as follows:

1903 — 164
1904 — 238
1905 — 189
1906 — 261
1997 — 315
1908 — 287
1909 — 298
1910 — 261
1911 — 202.

Consequently, those who suppose that Rio de Janeiro is a centre of malaria are wrong. We can also state we were freed from this disease thanks to the considerable works of sanitation carried out already and in course, at present, and we can confidently affirm that, within a few years, the disease will be entirely extinguished.



Lazaretto of Ilha Grande (3.rd class pavilion).

For this purpose the present Director of the General Department of Public Heath, Dr. Carlos Seidl, is studying the conditions of the suburban districts where he intends to extinguish the causes which maintain the germ of infection. According to the present Bye-Laws of public health, malaria is considered a disease of compulsory notification. Directly a case is notified the patient is isolated and protected from mosquito bites by a curtain, and at the same time all measures intended to destroy the breeding places of the anophelines which may be encountered, are duly taken.

XII

MEASLES AND SCARLET FEVER

Measles, an extremely contagious disease, spread all over the world, has long prevailed in an epidemic form in Brazil. The various epidemics which have broken out, following, generally, those of small-pox attack almost always children and have been mild, unless complicated with other serious prevalent diseases.

From 1830 to 1870 there were 15 epidemics of a mild character in Rio de Janeiro. From 1870 to 1912 the greatest epidemic manifestations occurred in 1887, 1905 and 1908 causing however a small number of victims.

By the accompanying diagram and tables it may be seen that the coefficients of mortality as compared with those of other cities were small.

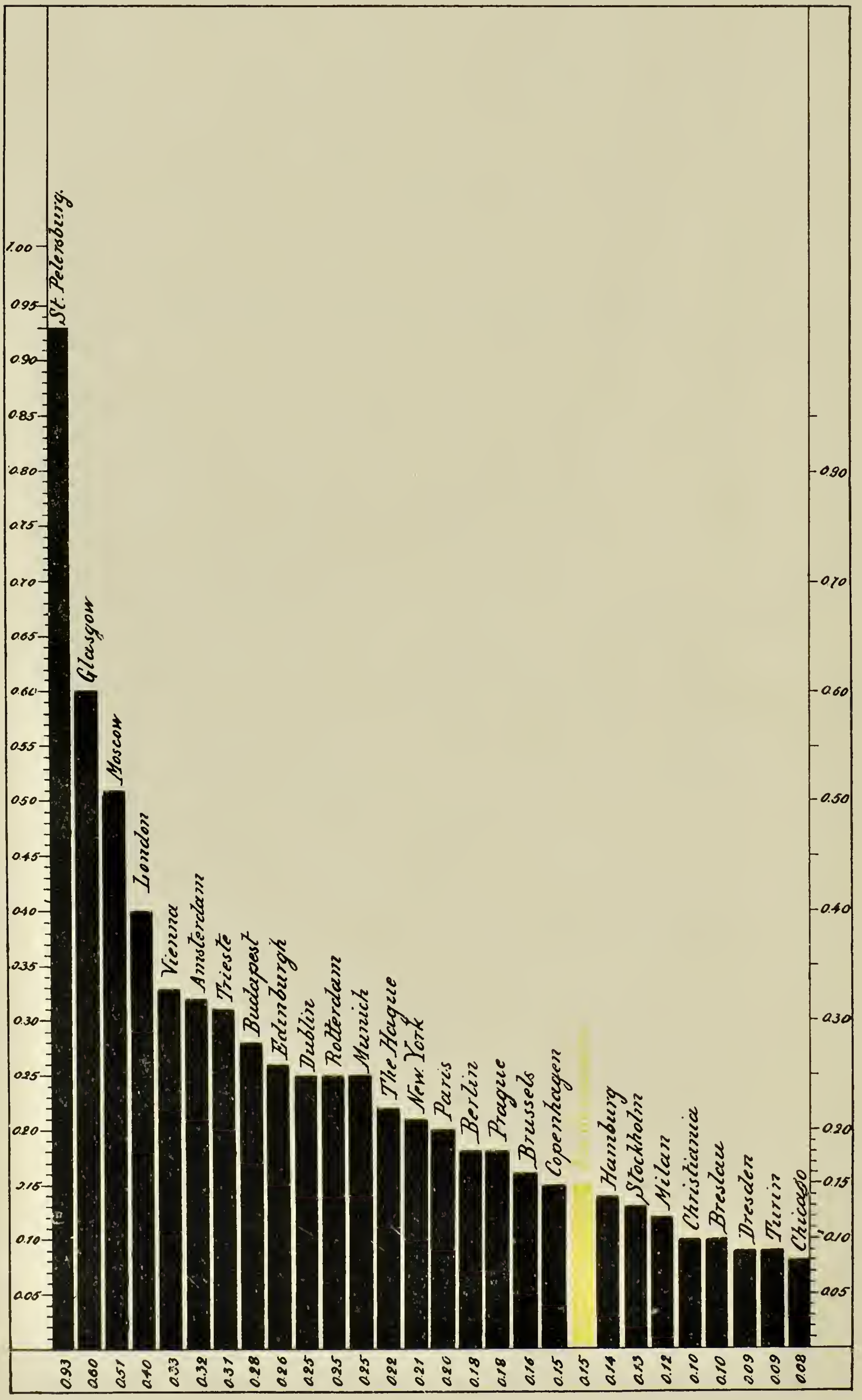
Scarlet fever, a disease essentially European, is rare among us. It made its appearance in the City of Rio de Janeiro in 1837, imported from the Province of Rio Grande do Sul and from the South American Republics, in the neighbourhood of that then Brazilian Province. In 1842 a new epidemic broke out, in a serious and intense form, assuming a typhoid character, causing innumerable victims. The third epidemic occurred in 1849 but it was small and of short duration.

At present this disease is shown in very small figures in our mortality statistics.

MEASLES

Annual Death-rates per 1.000 persons living

1906 — 1910



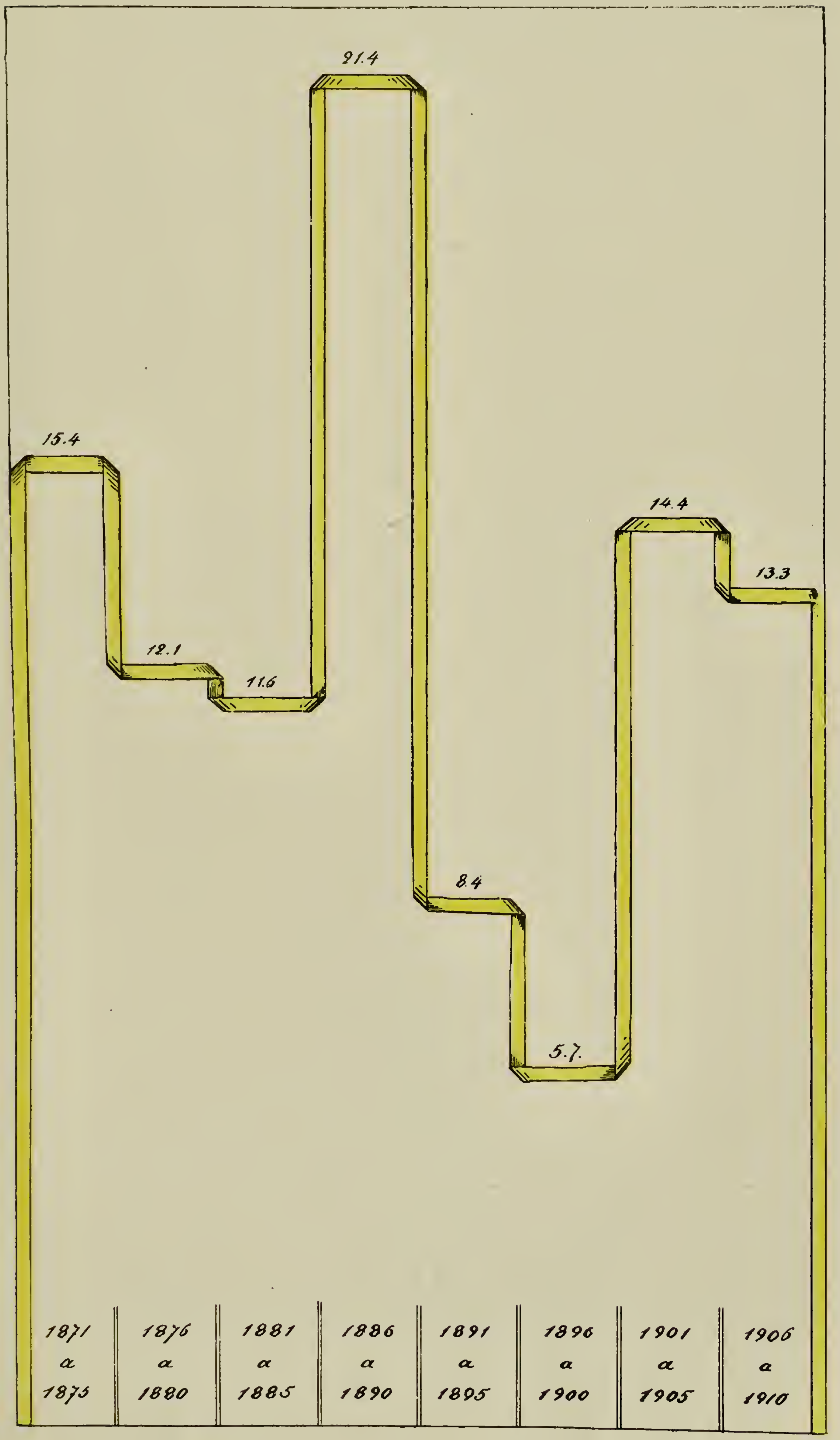
Annual Summary of deaths in London and others large towns.

MORTALITY FROM MEASLES

in the urban district of RIO DE JANEIRO

Quinquennal death-rates per 100.000 persons living

1871 – 1910



Mortality from measles in Rio de Janeiro

1903 - 1911

Federal District

YEARS	POPULATION	DEATHS	RATE PER 100.000 PER ANNUM
1903	749.180	86	11.47
1904	771.276	62	803
1905	794.266	270	33.99
1906	811.443	22	2.71
1907	824.040	49	5.94
1908	825.812	149	18.04
1909	842.822	57	6.75
1910	870.475	312	35.84
1911	921.987	144	15.61

Mortality from measles in Rio de Janeiro (Urban districts). 1859-1911

YEARS	DEATHS	YEARS	DEATHS
1859	3	1886	26
1860	5	1887	274
1861	11	1888	51
1862	13	1889	59
1863	27	1890	18
1864	213	1891	64
1865	?	1892	15
1866	?	1893	54
1867	?	1894	6
1868	10	1895	55
1869	24	1896	15
1870	22	1897	21
1871	31	1898	10
1872	48	1899	62
1873	26	1900	42
1874	30	1901	42
1875	45	1902	42
1876	24	1903	73
1877	34	1904	50
1878	52	1905	217
1879	42	1906	18
1880	17	1907	42
1881	4	1908	109
1882	25	1909	53
1883	139	1910	207
1884	13	1911	69
1885	—		

Death-rates from measles in Rio de Janeiro

1869-1911

Urban districts

YEARS	DEATHS	POPULATION	RATE PER 100.000 PER ANNUM
1869	24	189.529	12.6
1870	22	199.773	11.0
1871	31	213.713	14.5
1872	48	225.540	21.2
1873	26	233.473	11.1
1874	30	241.691	12.4
1875	45	250.212	17.9
1876	24	259.051	9.2
1877	34	268.228	12.6
1878	52	277.761	18.7
1879	42	287.672	14.5
1880	17	297.983	5.7
1881	4	308.721	1.2
1882	25	319.910	7.8
1883	139	331.582	41.9
1884	13	343.767	3.7
1885	13	356.500	3.6
1886	26	369.820	7.0
1887	274	383.766	71.3
1888	51	398.386	12.8
1889	59	413.728	14.2
1890	18	429.848	4.1
1891	64	440.118	14.5
1892	15	450.636	3.3
1893	54	461.411	11.8
1894	6	472.454	1.2
1895	55	483.773	11.3
1896	15	495.380	3.0
1897	21	507.285	4.1
1898	10	519.503	1.9
1899	62	532.042	11.6
1900	42	544.917	7.7
1901	42	558.140	7.5
1902	42	571.728	7.3
1903	73	585.695	12.4
1904	50	600.057	8.3
1905	217	614.831	35.2
1906	18	625.756	2.8
1907	42	636.018	6.6
1908	109	637.089	17.1
1909	53	649.362	8.1
1910	207	669.781	30.90
1911	69	703.659	9.73

Mortality from scarlet-fever in Rio de Janeiro

1903 - 1911

Federal District

YEARS	POPULATION	DEATHS	RATE PER 100.000 PER ANNUM
1903	749.180	4	0.53
1904	771.276	7	0.90
1905	794.266	4	0.50
1906	811.443	—	—
1907	824.040	1	0.12
1908	825.812	6	0.72
1909	842.822	2	0.23
1910	870.475	—	—
1911	921.937	—	—

Mortality from scarlet-fever in Rio de Janeiro (Urban districts). 1859-1911

YEARS	DEATHS	YEARS	DEATHS
1859	4	1886	3
1860	1	1887	2
1861	—	1888	—
1862	3	1889	2
1863	1	1890	2
1864	?	1891	9
1865	?	1892	9
1866	?	1893	—
1867	?	1894	—
1868	—	1895	4
1869	1	1896	4
1870	2	1897	2
1871	56	1898	—
1872	27	1899	1
1873	20	1900	—
1874	9	1901	3
1875	3	1902	5
1876	4	1903	4
1877	5	1904	7
1878	13	1905	4
1879	6	1906	—
1880	—	1907	1
1881	6	1908	6
1882	—	1909	2
1883	—	1910	—
1884	—	1911	—
1885	—		

Death-rates from scarlet-fever in Rio de Janeiro

1869-1911

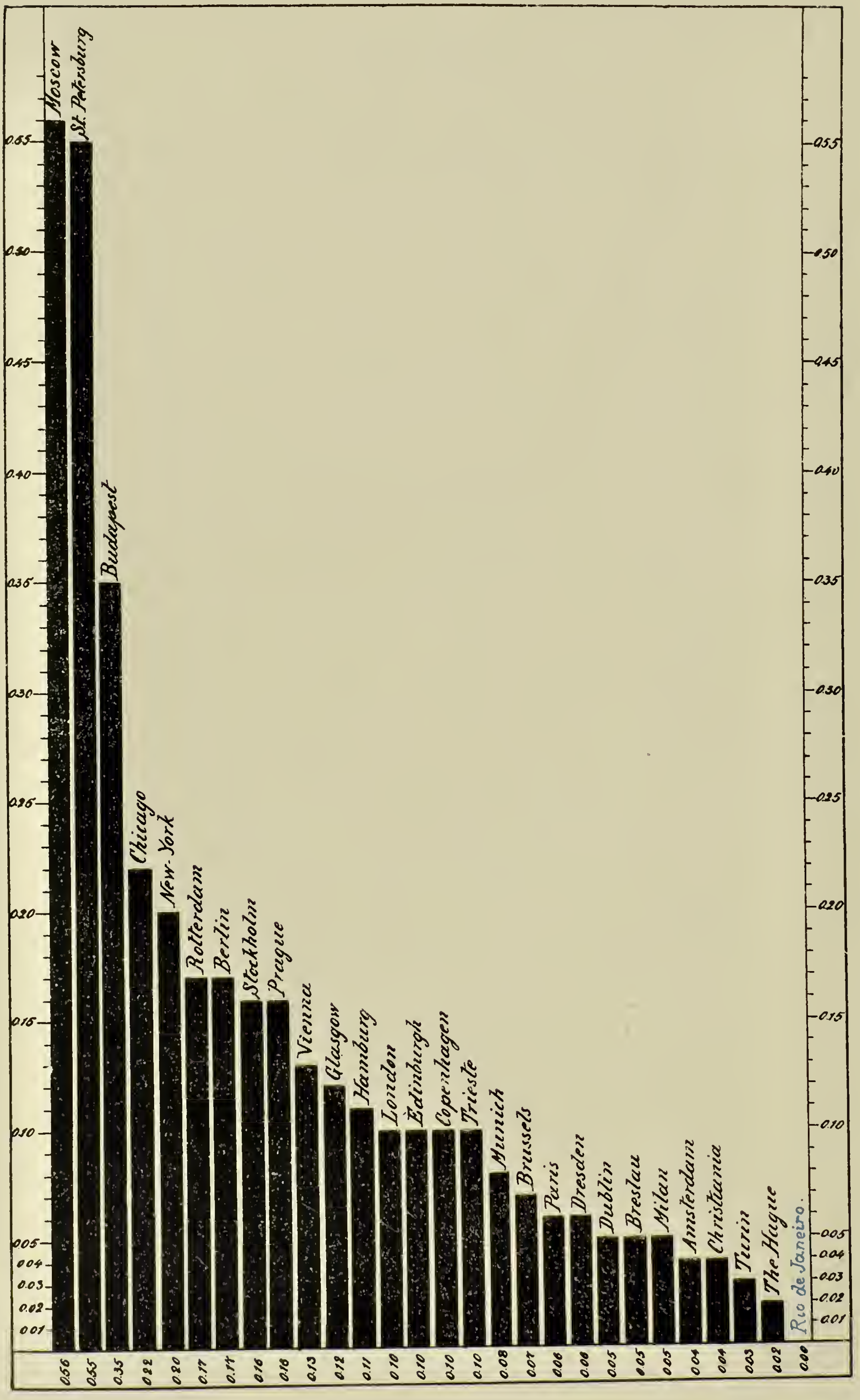
Urban districts

YEARS	DEATHS	POPULATION	RATE PER 100.000 PER ANNUM
1869	1	189.529	0.5
1870	2	199.773	1.0
1871	56	213.713	26.2
1872	27	225.540	11.9
1873	20	233.473	8.5
1874	9	241.691	3.7
1875	3	250.212	1.1
1876	4	259.051	1.5
1877	5	268.228	1.8
1878	18	277.761	6.4
1879	6	287.672	2.0
1880	—	297.983	—
1881	6	308.721	1.6
1882	—	319.910	—
1883	—	331.582	—
1884	—	343.767	—
1885	—	356.500	—
1886	3	369.820	0.8
1887	2	383.766	0.5
1888	—	398.386	—
1889	2	413.728	0.4
1890	2	429.848	0.4
1891	9	440.118	2.0
1892	9	450.636	1.9
1893	—	461.411	—
1894	—	472.454	—
1895	4	483.773	0.3
1896	4	495.380	0.8
1897	2	507.286	0.3
1898	—	519.503	—
1899	1	532.042	0.1
1900	—	544.917	—
1901	3	558.140	0.5
1902	5	571.728	0.8
1903	4	585.695	0.6
1904	7	600.057	1.1
1905	4	614.831	0.6
1906	—	625.756	—
1907	1	636.018	0.1
1908	6	637.089	0.9
1909	2	649.362	0.3
1910	—	669.781	—
1911	—	703.639	—

SCARLET FEVER

Annual Death-rates per 1.000 persons living

1906 — 1910



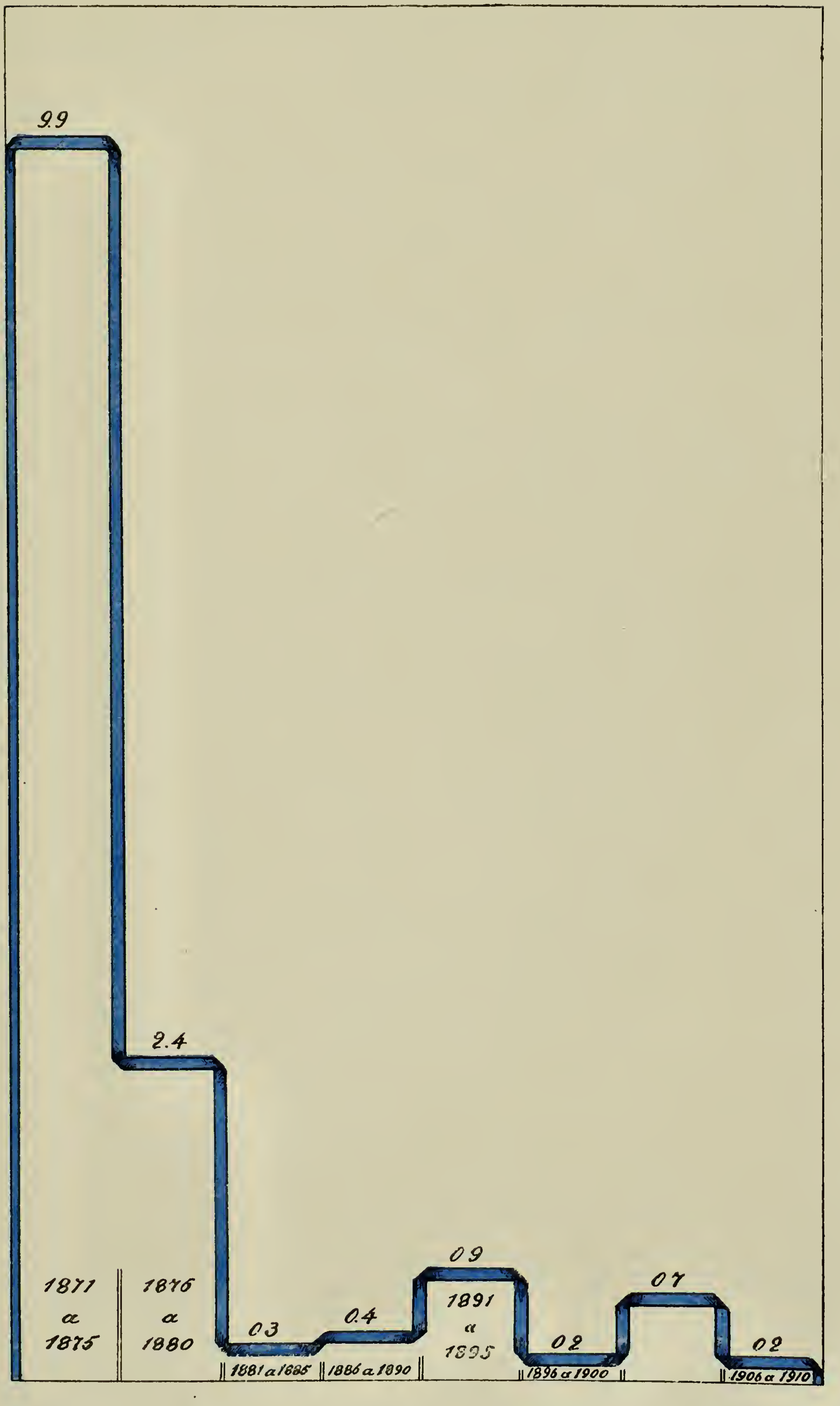
Annual Summary of deaths in London and others large towns.

MORTALITY FROM SCARLET FEVER

in the urban district of ***RIO DE JANEIRO***

Quinquennal death-rates per 100.000 persons living

1871 — 1910



PROPHYLAXIS

Measles and scarlet fever are only considered as diseases for compulsory notification when occurring in colleges, asylums, creches and other similar establishments.

The sanitary authorities shall remove the patient to the hospital or to his dwelling, where domiciliary isolation shall be carried out, and shall specify such measures as may be required to avoid the propagation of the disease.

Children attacked with scarlet fever can only be admitted into schools, asylums and other similar establishments with a written certificate from the sanitary authority.

Measures regarding the disinfection of the room in which the cases occur as well as of the clothing and objects belonging to the patients shall be immediately taken in accordance with the nature of the said diseases.

The prophylactic measures for measles are not very efficacious as the symptoms of the disease only manifest themselves, in a clear and positive manner, after the period of greatest contagion. The isolation and inspection for a period of 15 days, of such children as may have been in contact with those attacked by measles, is always very convenient and useful.

In scarlet fever, however, the prophylatic measures, well taken are always of great utility because the disease is not very contagious in its first stages.

All clothing and objects used by scarlet fever patients, must receive the greatest care and be carefully disinfected, knowing the great facility with which the germs of the disease attack to objects and remain there for a long time.

XIII

BERI-BERI

Beri-beri or KAKKE' is a polynevrite toxi-infectious disease of a doubtful etiology, known in China since the 3rd century of the Christian Era.

In many countries of the world this disease reigns in an endemic form, chiefly in the whole intertropical zone. Its geographical distribution, however, is not constant.

Formerly unknown in Brazil it first broke out in 1863 and, since then, it has formed part of Brazilian pathology.

In many Northern States it has frequently burst out and with considerable gravity.

In the city of Rio de Janeiro, it prevailed in an epidemic form, for the first time, in 1889, with a serious repetition of the epidemics in 1894.

This disease has gradually decreased, the death-rate being very much reduced as may be seen from the table hereinafter.

PROPHYLAXIS

The Sanitary Law includes beri-beri among the diseases of compulsory notification although there be many controversies as regards its etiology and pathogeny.

The prophylactic measures consist only in the isolation of the patient, whenever possible, and the disinfection of the infected premises and pieces of clothing.

The modification of the diet and the improvement of the general conditions of hygiene are the safest means for the true prophylaxis of beri-beri.

These are the measures which have given some good results in the decrease and extinction of the cases which often occur in the crews of the ships of the Brazilian Navy.

Mortality from beriberi in Rio de Janeiro

1903 - 1911

Federal District

YEARS	POPULATION	DEATHS	RATE PER 100.000 INHABITANTS
1903	749.180	120	16.01
1904	771.276	124	16.07
1905	794.266	73	9.19
1906	811.443	77	9.48
1907	824.040	34	4.12
1908	825.812	33	3.99
1909	842.822	32	3.79
1910	870.475	25	2.87
1911	921.987	12	1.30

Mortality from beriberi in Rio de Janeiro (Urban districts). 1874-1911

YEARS	DEATHS	YEARS	DEATHS
1874	2	1893	89
1875	2	1894	363
1876	6	1895	128
1877	6	1896	273
1878	12	1897	302
1879	12	1898	276
1880	13	1899	119
1881	15	1900	152
1882	18	1901	94
1883	18	1902	99
1884	14	1903	109
1885	36	1904	120
1886	67	1905	67
1887	64	1906	69
1888	61	1907	31
1889	498	1908	31
1890	332	1909	29
1891	156	1910	19
1892	111	1911	10

Death-rates from Beriberi in Rio de Janeiro

1874-1911

Urban districts

YEARS	DEATHS	POPUTA-TION	RATE PER 100.000 PER ANNUM
1874	2	241.691	0.8
1875	2	250.212	0.7
1876	6	259.651	2.3
1877	6	268.228	2.2
1878	12	277.761	4.3
1879	12	287.672	4.1
1880	13	297.983	4.3
1881	15	308.721	4.8
1882	18	319.910	5.6
1883	18	331.582	5.4
1884	14	343.767	4.0
1885	36	356.500	10.0
1886	67	369.820	18.1
1887	64	383.766	16.6
1888	61	398.386	15.3
1889	498	413.728	120.1
1890	332	429.848	77.2
1891	156	440.118	35.4
1892	191	450.636	42.3
1893	81	461.411	17.5
1894	363	472.454	76.8
1895	128	483.773	26.4
1896	273	495.380	55.1
1897	302	507.286	59.5
1898	276	519.503	53.1
1899	149	532.042	28.0
1900	152	544.917	27.8
1901	94	558.140	16.8
1902	99	571.728	17.3
1903	109	585.695	18.6
1904	120	600.057	19.8
1905	67	614.831	10.8
1906	69	625.756	10.9
1907	31	636·018	4.8
1908	31	637.089	4.8
1909	29	649.362	4.5
1910	19	669.781	2.8
1911	10	708.669	1.4

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MORTALITY FROM BERIBERI

in the urban district of RIO DE JANEIRO

1876 — 1910

Quinquennal death-rates per 100.000 persons living